



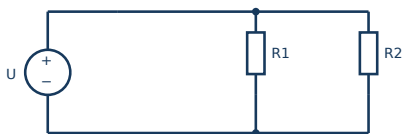
Worksheet · 20 tasks

Name: _____ Datum / Date: _____ Klasse / Class: _____

01 An unpowered resistor measures $998\ \Omega$. Nominal value $1\ \text{k}\Omega$. Find relative error.

Method · units · working · check result

02 Why may an in-circuit resistance measurement be too low?



Concept diagram; values are in the task.

Method · units · working · check result

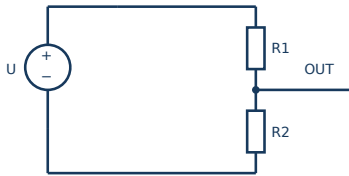
Measurement and troubleshooting

Worksheet · 20 tasks

Name: _____ Datum / Date: _____ Klasse / Class: _____

- 03** A $10\text{ k}\Omega/10\text{ k}\Omega$ divider at 10 V is measured across its lower resistor using a $10\text{ M}\Omega$ voltmeter. Estimate the reading.

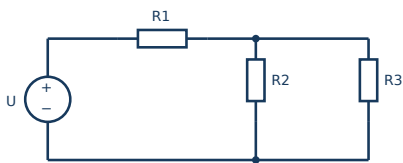
Concept diagram; values are in the task.



Method · units · working · check result

- 04** The same $10\text{ M}\Omega$ meter measures a $10\text{ M}\Omega/10\text{ M}\Omega$ divider at 10 V . Find the reading.

Concept diagram; values are in the task.



Method · units · working · check result



Measurement and troubleshooting

Worksheet · 20 tasks

Name: _____ Datum / Date: _____ Klasse / Class: _____

- 05** Oscilloscope: 2 V per division; sine spans 3 divisions peak-to-peak. Find peak-to-peak and peak voltage.

Method · units · working · check result

- 06** Find RMS voltage of the sine in task 5, with no DC offset.

Method · units · working · check result



Measurement and troubleshooting

Worksheet · 20 tasks

Name: _____ Datum / Date: _____ Klasse / Class: _____

07 Timebase 0.2 ms per division; one cycle spans 5 divisions. Find frequency.

Method · units · working · check result

08 Two 1 kHz sine waves are offset by 0.25 ms. Find phase-difference magnitude.

Method · units · working · check result



Worksheet · 20 tasks

Name: _____ Datum / Date: _____ Klasse / Class: _____

09 A measurement gives 2 V input and 1 V output. Find voltage gain in dB.

Method · units · working · check result

10 A time window is 5 ms long. Estimate characteristic frequency resolution using $1/T$.

Method · units · working · check result



Worksheet · 20 tasks

Name: _____ Datum / Date: _____ Klasse / Class: _____

11 What window duration gives 50 Hz resolution by the same approximation?

Method · units · working · check result

12 A reflected path is 1.715 m longer than the direct path. How much later does it arrive, $c = 343 \text{ m/s}$?

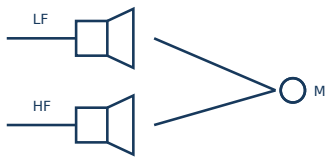
Method · units · working · check result

Measurement and troubleshooting

Worksheet · 20 tasks

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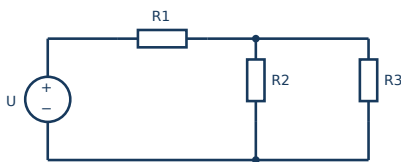
- 13** A crossover sum shows a dip, while both individual branches have sufficient level there. Name three checks before replacing components.



Concept diagram; values are in the task.

Method · units · working · check result

- 14** An unloaded divider correctly gives 5 V, but only 3 V after a module is connected. What is the first hypothesis?



Concept diagram; values are in the task.

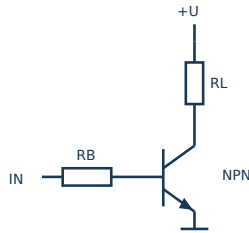
Method · units · working · check result

Measurement and troubleshooting

Worksheet · 20 tasks

Name: _____ Datum / Date: _____ Klasse / Class: _____

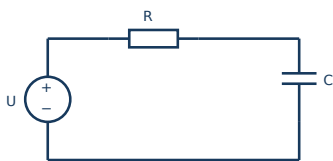
- 15** An NPN switch has 5 V supply and 4.9 V at its collector while commanded ON. Load goes to positive. Is it likely fully on?



Concept diagram; values are in the task.

Method · units · working · check result

- 16** An RC charge reaches 63.2% after 0.47 s. R is 10 kΩ. Estimate C.



Concept diagram; values are in the task.

Method · units · working · check result

Name: _____ Datum / Date: _____ Klasse / Class: _____

17 A resistor is specified $100\ \Omega \pm 1\%$. It measures $102\ \Omega$ with meter uncertainty $\pm 2\ \Omega$. Is it definitely out of tolerance?

Method · units · working · check result

18 A 2 V RMS sine drives a pure $8\ \Omega$ resistor. Find power. Can the same method be blindly applied to a real driver?

Method · units · working · check result



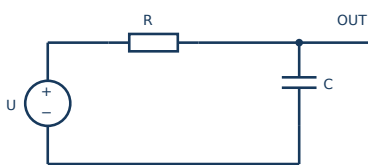
Worksheet · 20 tasks

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19 A frequency response looks better after stronger smoothing. Has the circuit improved? Explain.

Method · units · working · check result

20 Create a short measurement record for an RC low-pass with at least six documented fields.



Concept diagram; values are in the task.

Method · units · working · check result