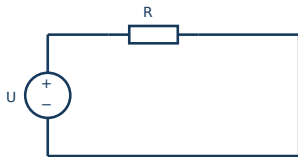




Worksheet · 20 tasks

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

01 An ideal 6 V source supplies 300 Ω . Mark conventional current direction and find I.



Concept diagram; values are in the task.

Method · units · working · check result

02 Convert 0.004 A to mA and 4.7 k Ω to Ω . Why use consistent units?

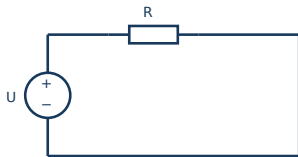
Method · units · working · check result

Fundamentals and mixed circuits

Worksheet · 20 tasks

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

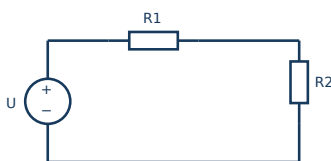
03 A $470\ \Omega$ resistor has $9\ \text{V}$ across it. Find current and dissipation. Is $0.125\ \text{W}$ sufficient?



Concept diagram; values are in the task.

Method · units · working · check result

04 $220\ \Omega$ and $330\ \Omega$ are in series across $11\ \text{V}$. Find total resistance and current.



Concept diagram; values are in the task.

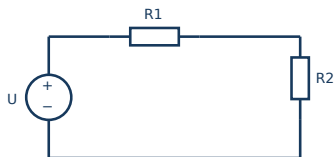
Method · units · working · check result

Fundamentals and mixed circuits

Worksheet · 20 tasks

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

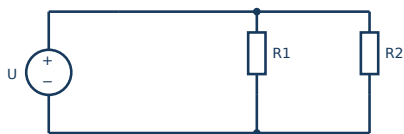
05 Use the previous series circuit. Find both voltage drops and check their sum.



Concept diagram; values are in the task.

Method · units · working · check result

06 Two 1 kΩ resistors are in parallel. Find equivalent resistance.



Concept diagram; values are in the task.

Method · units · working · check result

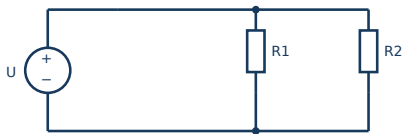
Fundamentals and mixed circuits

Worksheet · 20 tasks

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

07 300 Ω and 600 Ω are parallel across 6 V. Find branch and total currents.

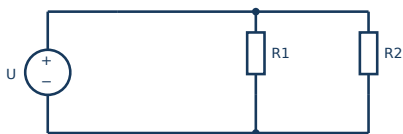
Concept diagram; values are in the task.



Method · units · working · check result

08 Without calculating: can 300 Ω in parallel with 600 Ω exceed 300 Ω ? Explain.

Concept diagram; values are in the task.



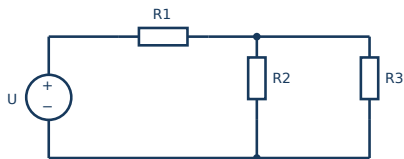
Method · units · working · check result

Fundamentals and mixed circuits

Worksheet · 20 tasks

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

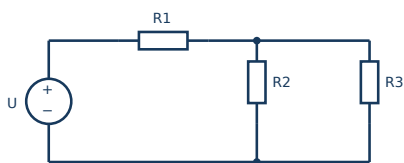
09 Mixed: $R_1 = 100\ \Omega$ in series with $R_2 = 300\ \Omega$ parallel $R_3 = 600\ \Omega$; source 12 V. Find total R.



Concept diagram; values are in the task.

Method · units · working · check result

10 Use the mixed circuit in task 9. Find total current and parallel-group voltage.



Concept diagram; values are in the task.

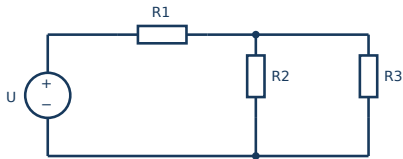
Method · units · working · check result

Fundamentals and mixed circuits

Worksheet · 20 tasks

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

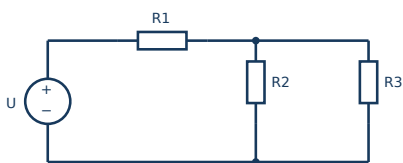
11 Find both branch currents in task 9. Verify Kirchhoff's current law.



Concept diagram; values are in the task.

Method · units · working · check result

12 R3 in task 9 becomes open-circuit. Find the new source current.



Concept diagram; values are in the task.

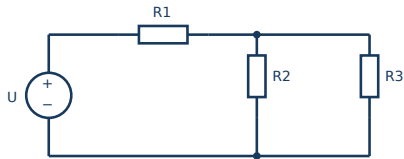
Method · units · working · check result

Fundamentals and mixed circuits

Worksheet · 20 tasks

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

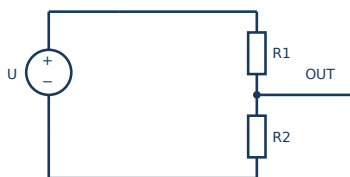
13 R3 in task 9 is ideally shorted. What are R2 voltage and source current?



Concept diagram; values are in the task.

Method · units · working · check result

14 Divider: $R1 = 2 \text{ k}\Omega$ upper, $R2 = 3 \text{ k}\Omega$ lower, input 10 V. Unloaded output across R2. Find output.



Concept diagram; values are in the task.

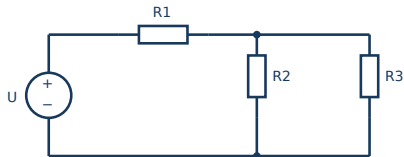
Method · units · working · check result

Fundamentals and mixed circuits

Worksheet · 20 tasks

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

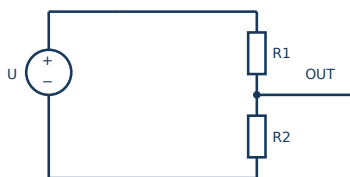
15 Load the divider in task 14 with $3\text{ k}\Omega$ across R_2 . Find the new output.



Concept diagram; values are in the task.

Method · units · working · check result

16 An unloaded divider should turn 12 V into 3 V . Choose $R_2 = 1\text{ k}\Omega$. Find R_1 .



Concept diagram; values are in the task.

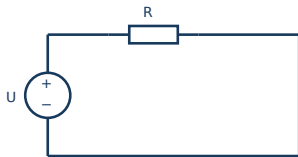
Method · units · working · check result



Worksheet · 20 tasks

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

17 An $8\ \Omega$ resistor has 4 V DC across it. Find P. What happens at 8 V?



Concept diagram; values are in the task.

Method · units · working · check result

18 A 1 k Ω resistor has $\pm 5\%$ tolerance. Find minimum and maximum current at ideal 5 V.

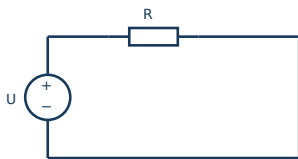
Method · units · working · check result

Fundamentals and mixed circuits

Worksheet · 20 tasks

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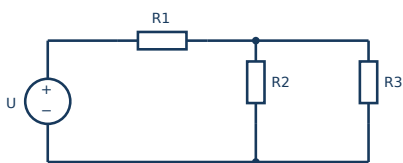
- 19** How do you connect ideal ammeter and voltmeter to a resistor? Explain the short-circuit mistake.



Concept diagram; values are in the task.

Method · units · working · check result

- 20** Verify the power balance of task 9: source power and three resistor dissipations.



Concept diagram; values are in the task.

Method · units · working · check result