

Physik * Jahrgangsstufe 8 * Aufgaben zur Parallel- und Serienschaltung von Widerständen

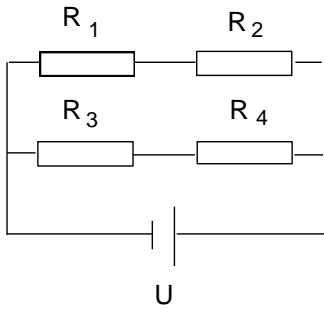
Für alle Aufgaben gelte:

$R_1 = R_2 = R_3 = 100 \text{ Ohm}$; $R_4 = R_5 = R_6 = 50 \text{ Ohm}$; $R_7 = R_8 = 200 \text{ Ohm}$ und $U = 10 \text{ Volt}$.

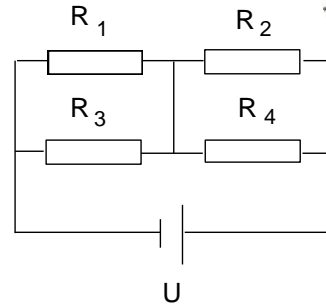
Berechne jeweils R_{ges} , $J_{\text{ges}} = J_{\text{Batterie}}$, U_1 und J_1 .



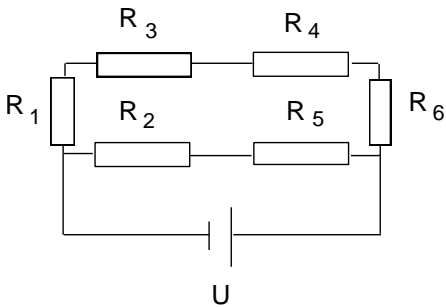
Figur 1



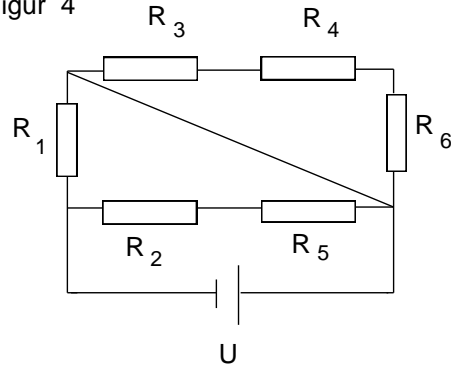
Figur 2



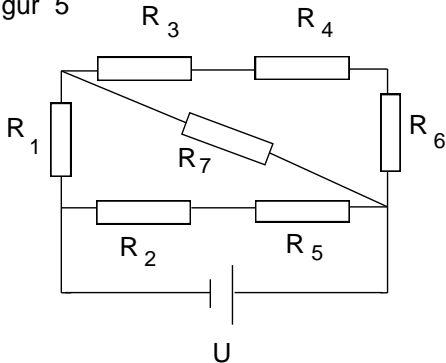
Figur 3



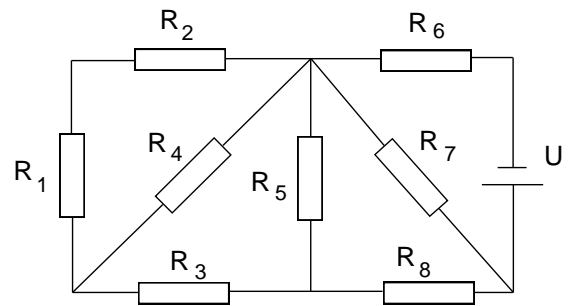
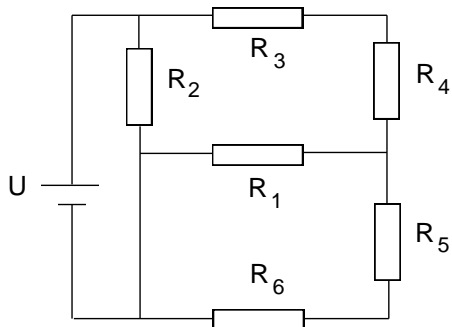
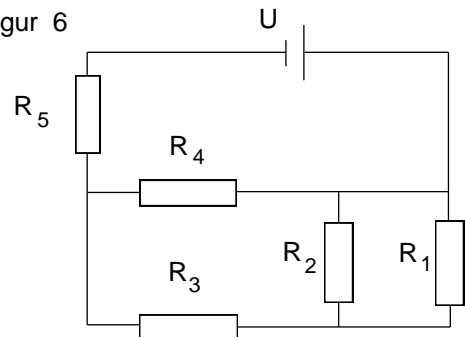
Figur 4



Figur 5

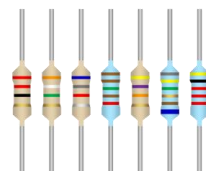


Figur 6



Figur 7

Figur 8 (schwer !)



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Lösungen

Figur 1

$$R_{\text{ges}} = 86 \, \Omega, J_{\text{ges}} = 116 \, \text{mA}, U_1 = 5,0 \, \text{V}, J_1 = 50 \, \text{mA}$$



Figur 2

$$R_{\text{ges}} = 83 \, \Omega, J_{\text{ges}} = 120 \, \text{mA}, U_1 = 6,0 \, \text{V}, J_1 = 60 \, \text{mA}$$



Figur 3

$$R_{\text{ges}} = 100 \, \Omega, J_{\text{ges}} = 100 \, \text{mA}, U_1 = 3,3 \, \text{V}, J_1 = 33 \, \text{mA}$$

Figur 4

$$R_{\text{ges}} = 60 \, \Omega, J_{\text{ges}} = 167 \, \text{mA}, U_1 = 10 \, \text{V}, J_1 = 100 \, \text{mA}$$

Figur 5

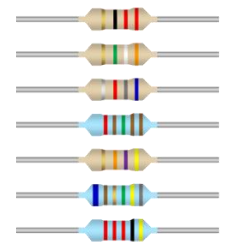
$$R_{\text{ges}} = 86 \, \Omega, J_{\text{ges}} = 116 \, \text{mA}, U_1 = 5,0 \, \text{V}, J_1 = 50 \, \text{mA}$$

Figur 6

$$R_{\text{ges}} = 88 \, \Omega, J_{\text{ges}} = 114 \, \text{mA}, U_1 = 1,4 \, \text{V}, J_1 = 14 \, \text{mA}$$

Figur 7

$$R_{\text{ges}} = 67 \, \Omega, J_{\text{ges}} = 149 \, \text{mA}, U_1 = 2,5 \, \text{V}, J_1 = 25 \, \text{mA}$$



Figur 8 (schwer!)

$$R_{\text{ges}} = 158 \, \Omega, J_{\text{ges}} = 63 \, \text{mA}, U_1 = 0,16 \, \text{V}, J_1 = 1,6 \, \text{mA}$$

(weitere Zwischenergebnisse: $U_7 = 6,8 \, \text{V}$, $U_5 = 1,1 \, \text{V}$, $U_4 = 0,31 \, \text{V}$)