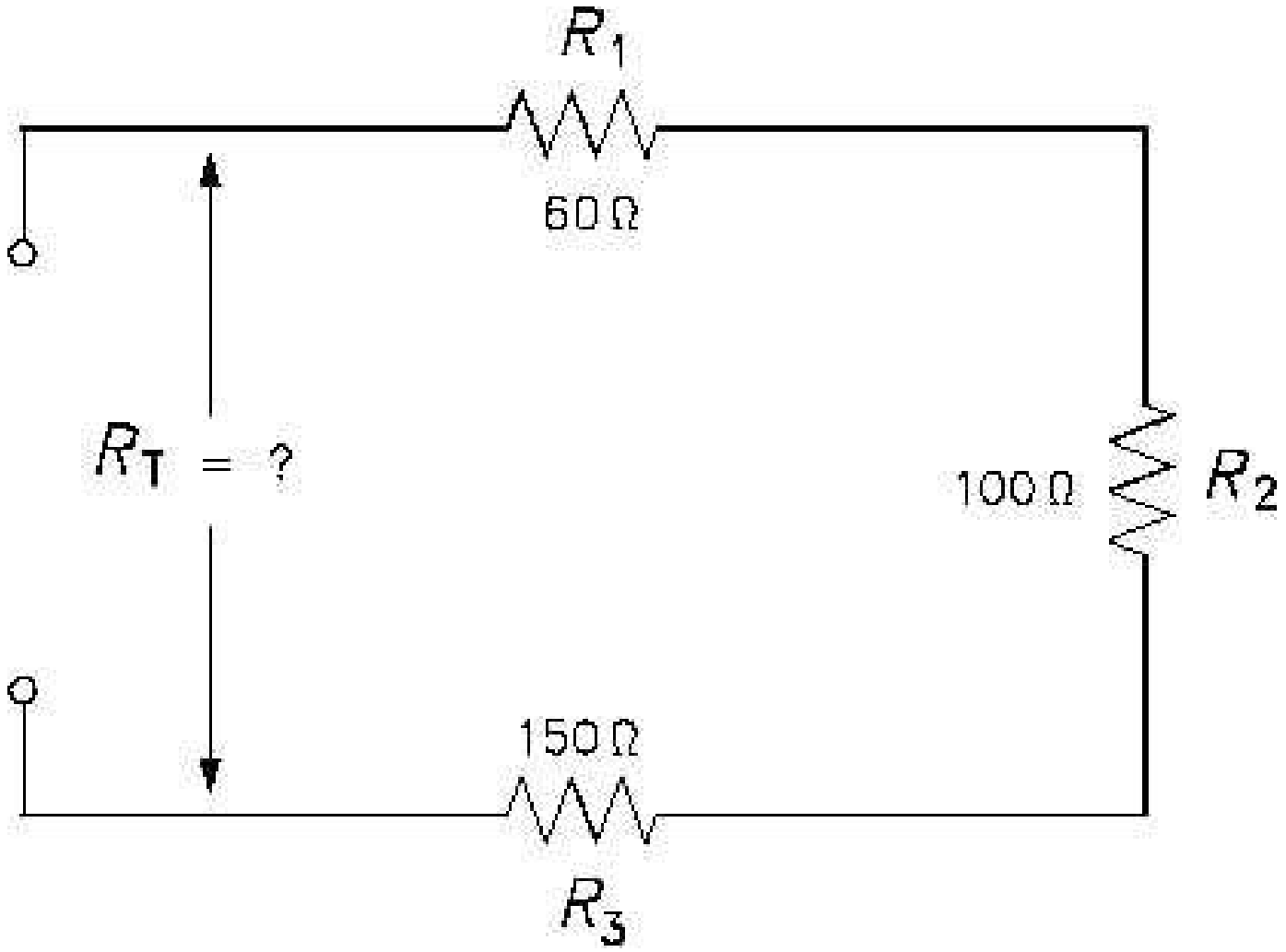
Ellenállások kapcsolása

feladatok

Soros kapcsolás

1.) Határozd meg az ered Ő ellenállást.



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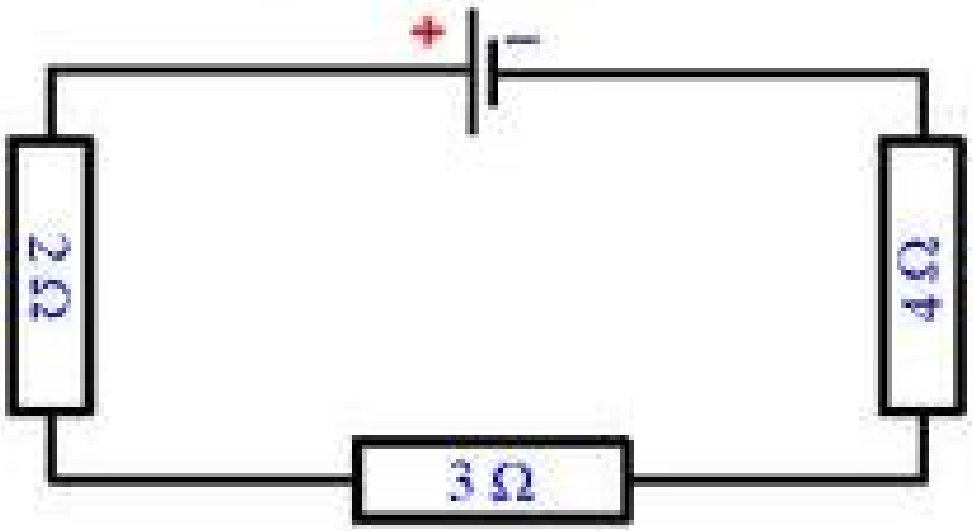

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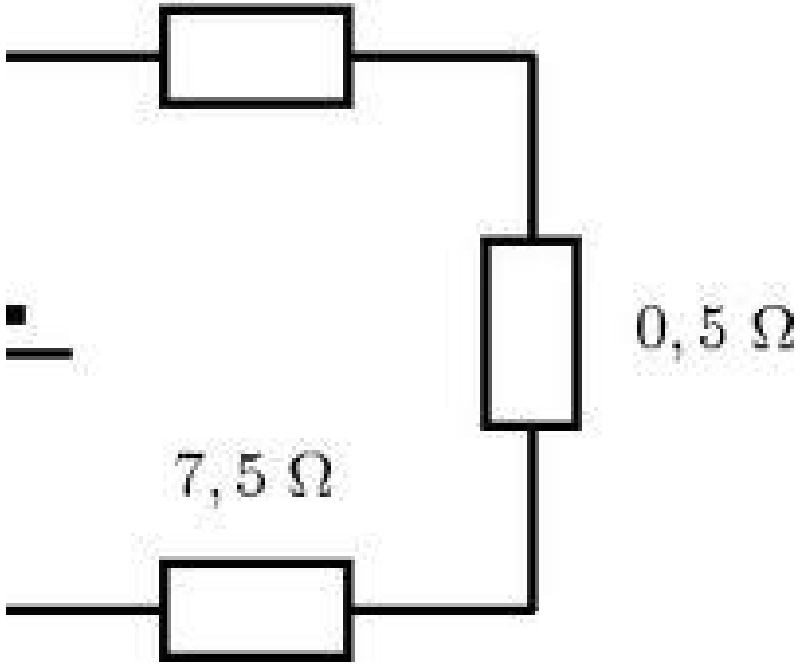
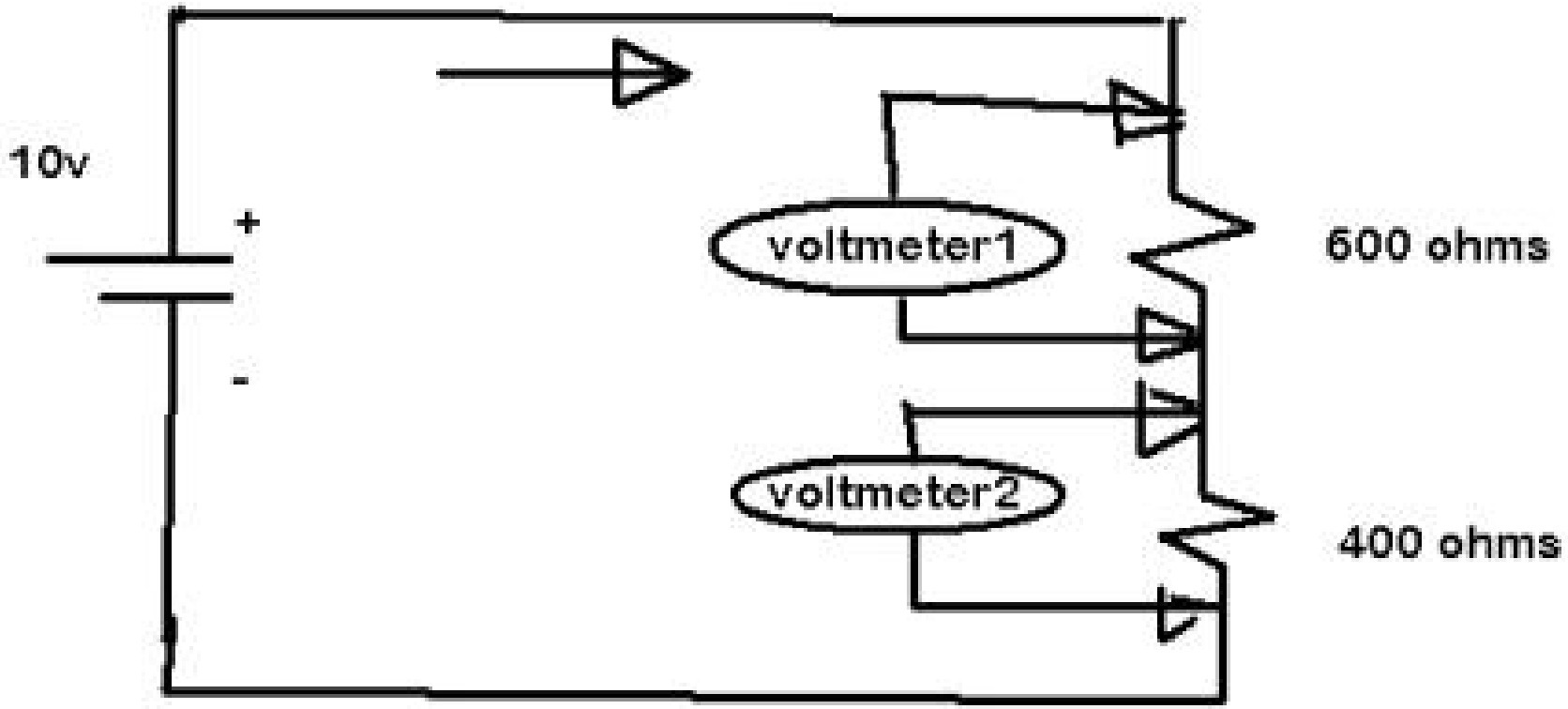
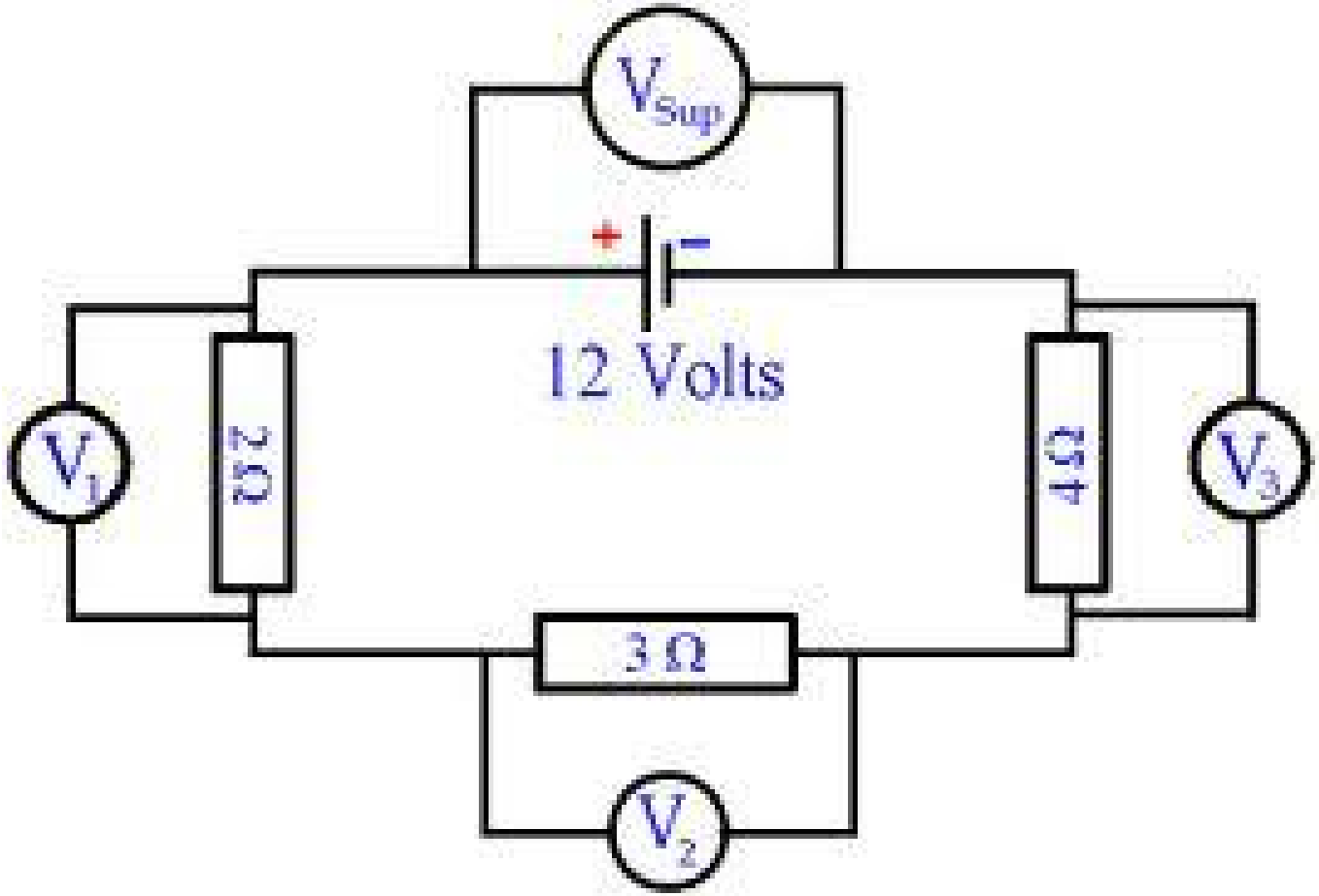


4. Mekkora az áramkörben folyó áramerősség és mekkora feszültségeket mérnek a voltmérők az egyes ellenállásokon?



5. Határozd meg az eredő ellenállást, az áramerősséget és a feszültségeket az egyes ellenállásokon.



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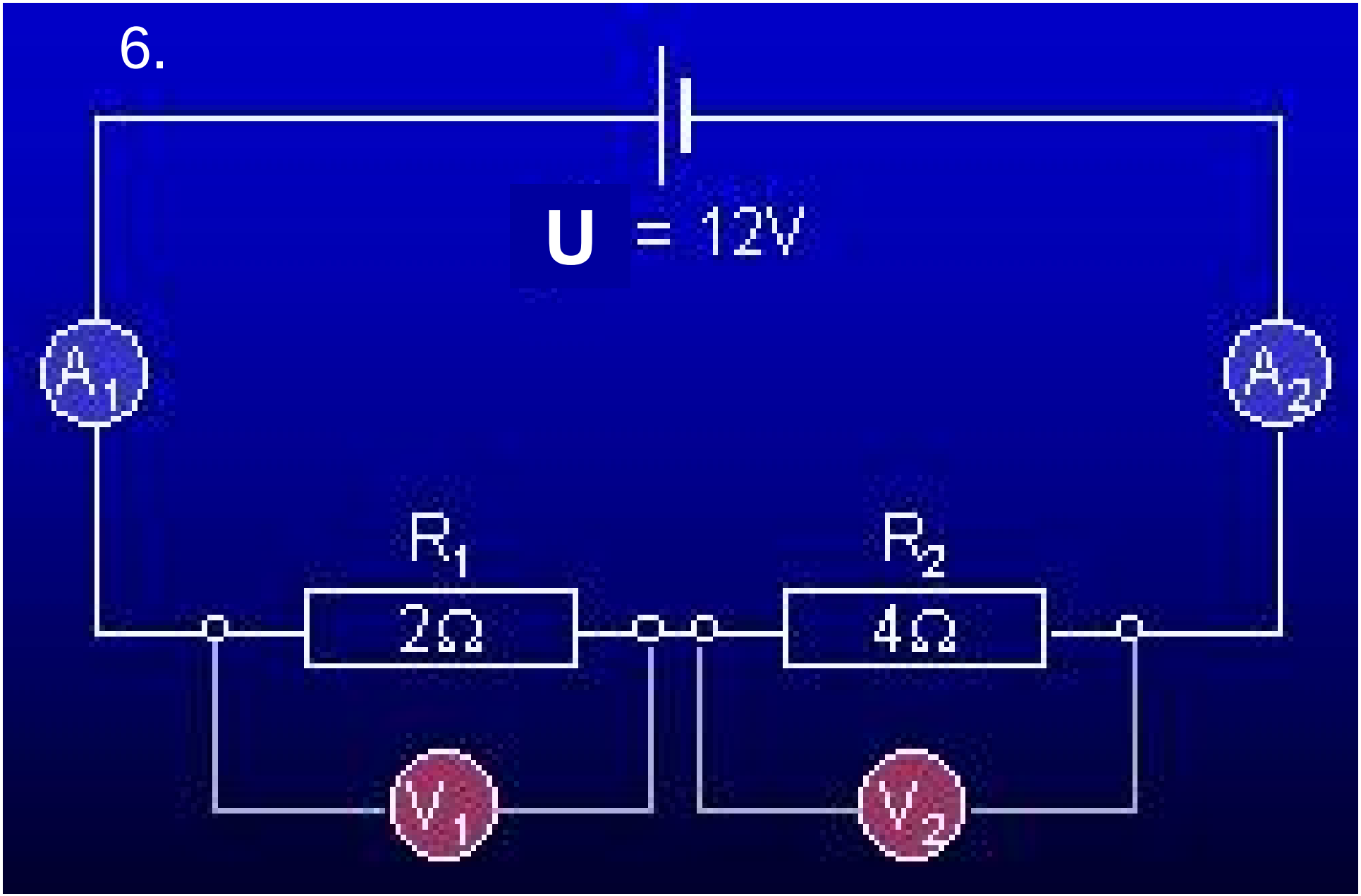

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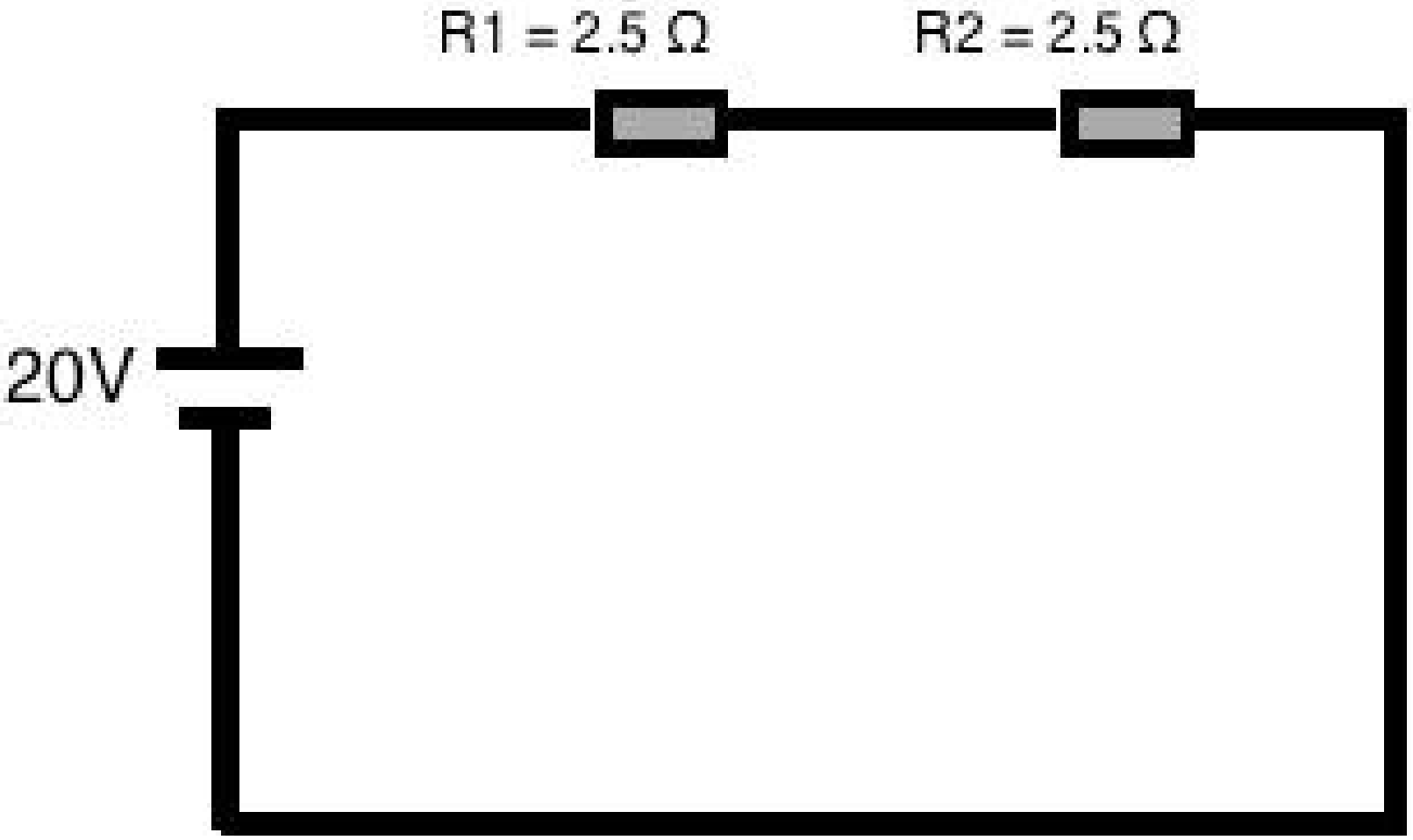

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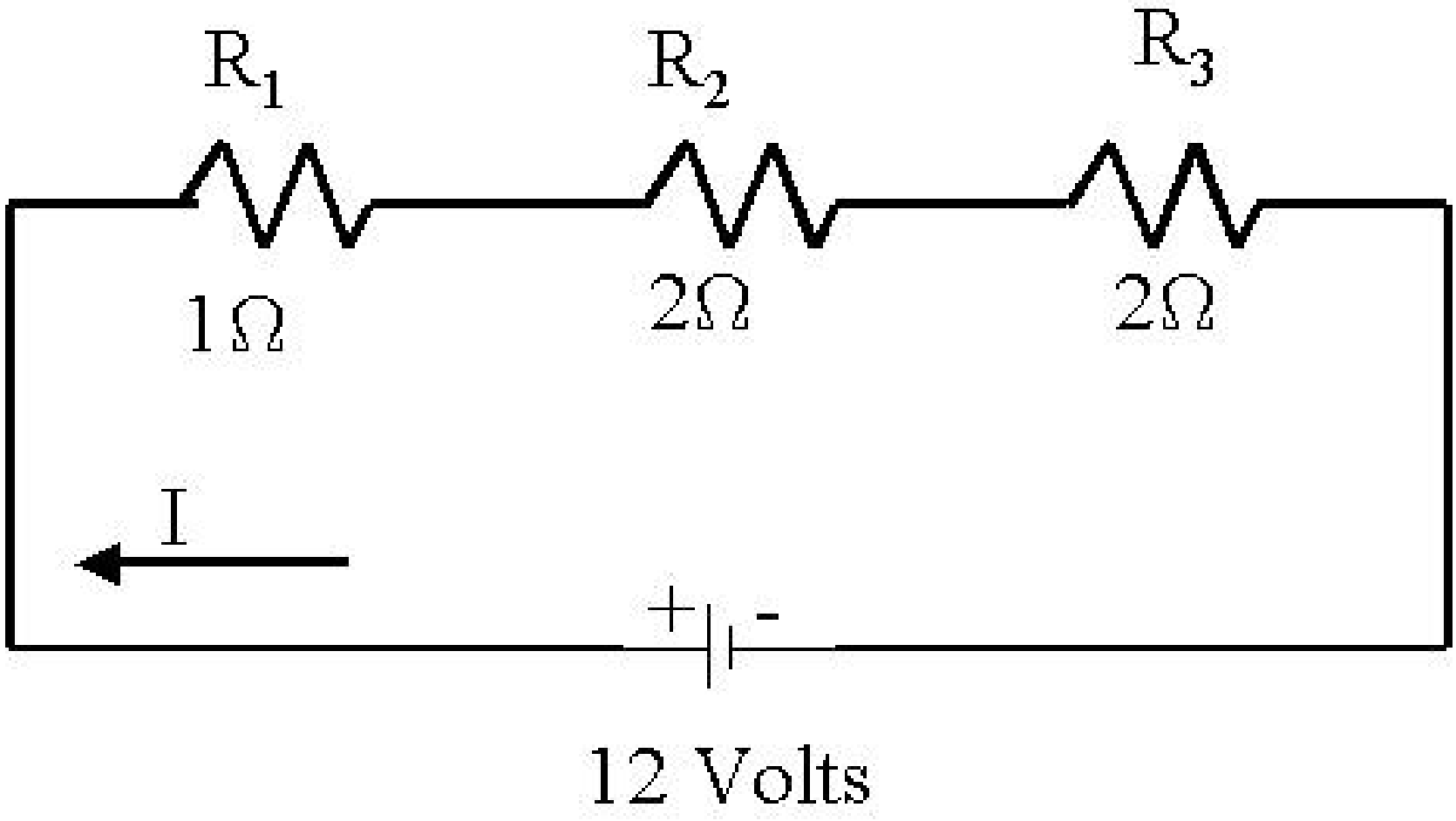

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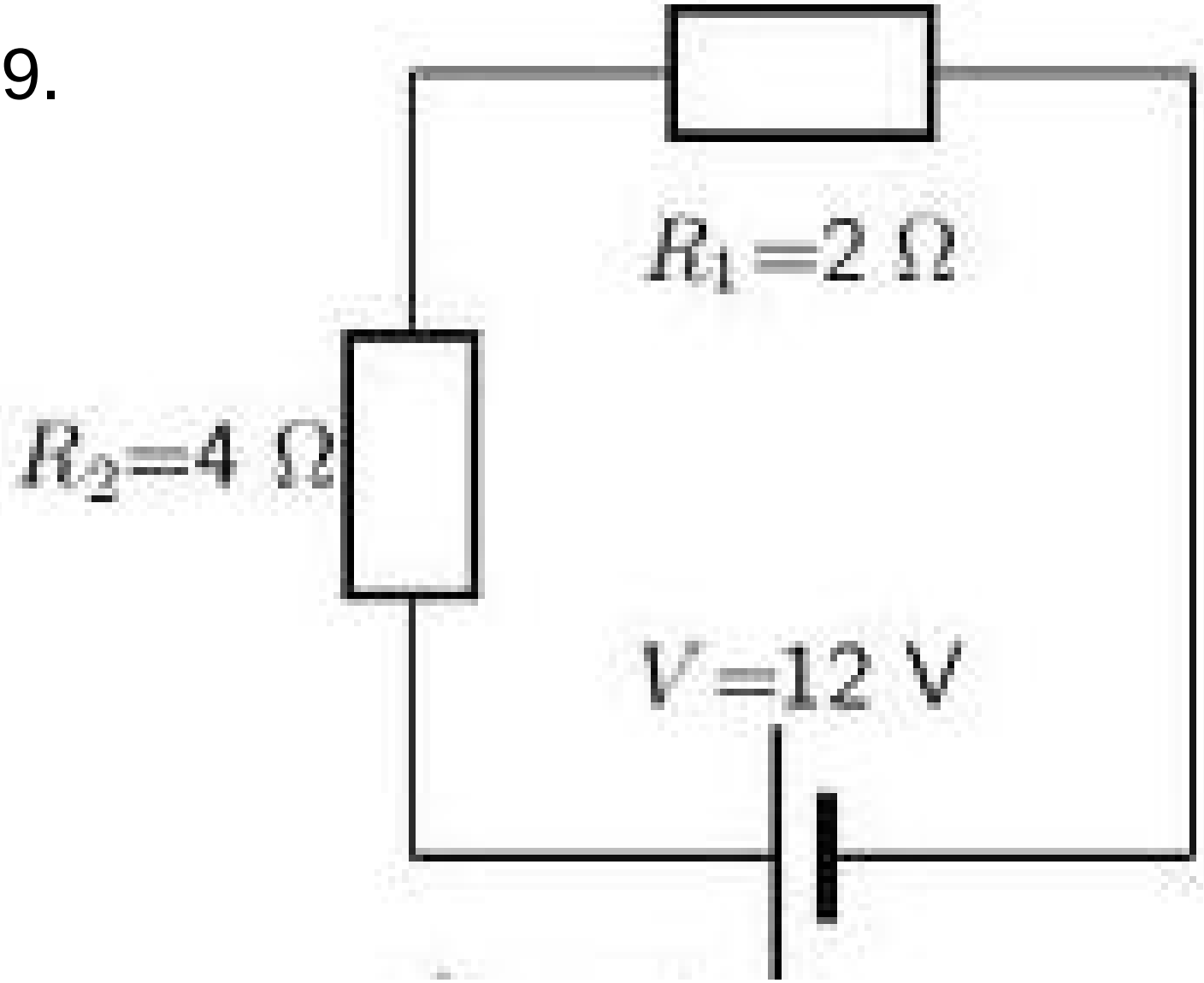

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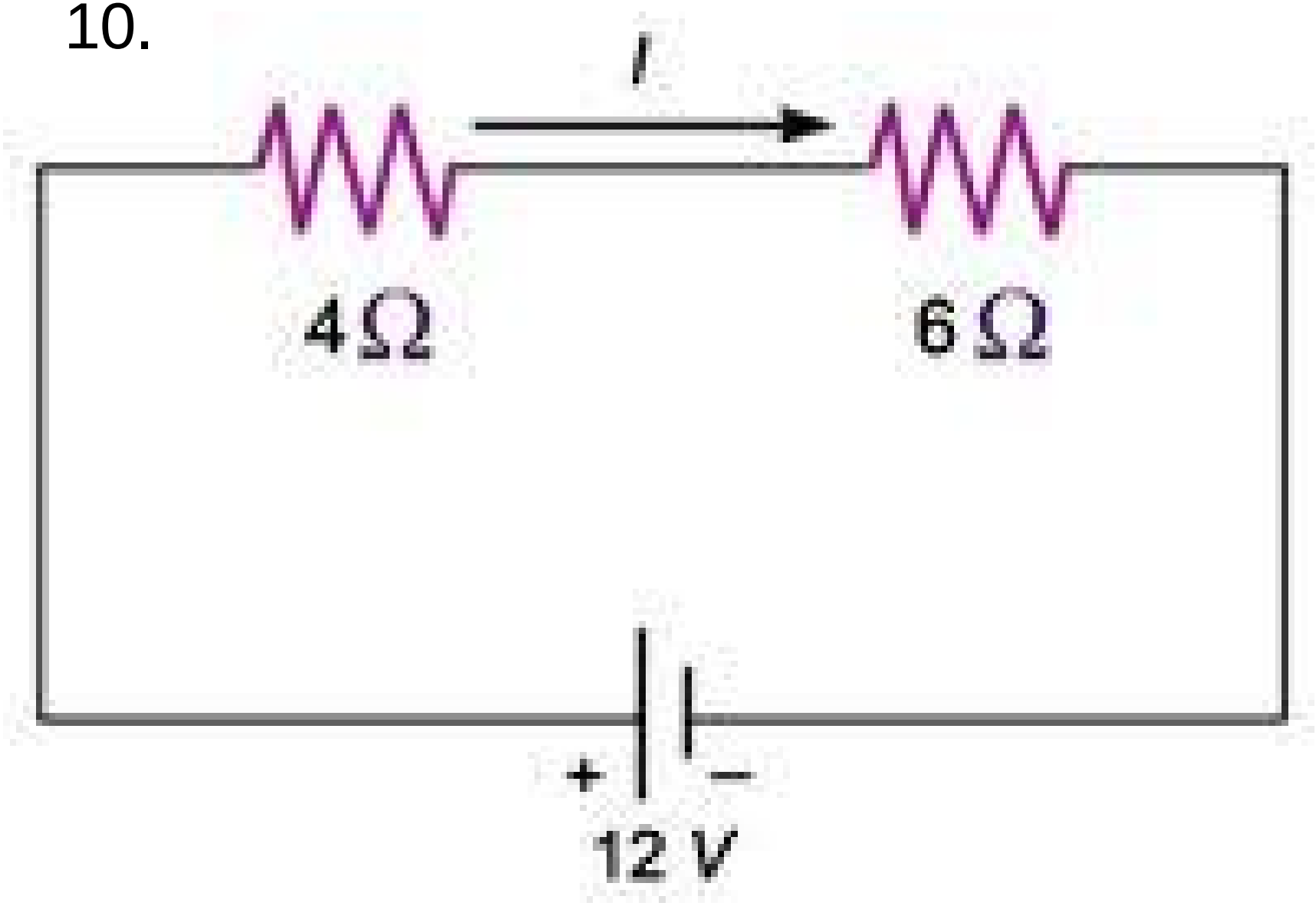

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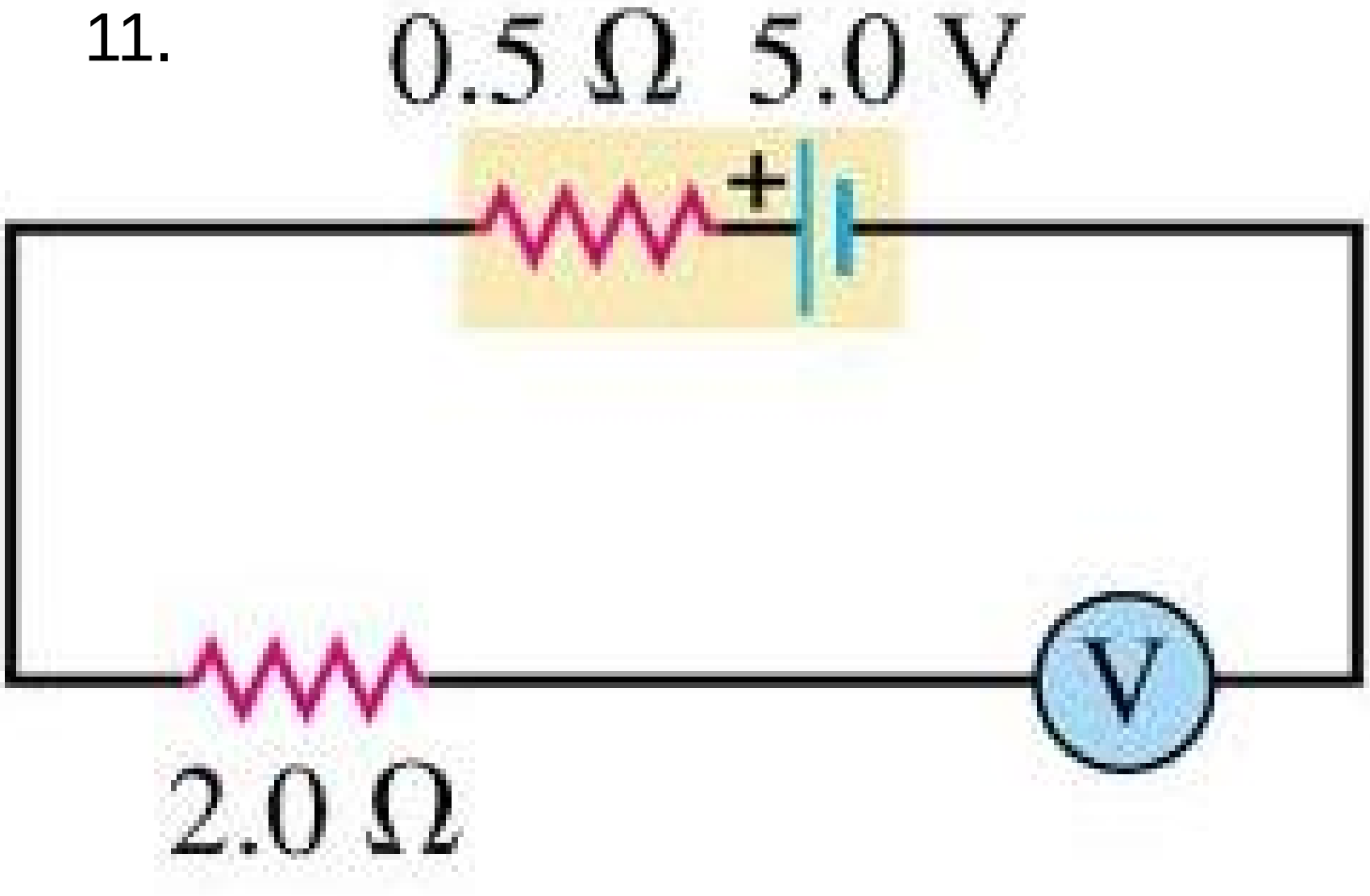

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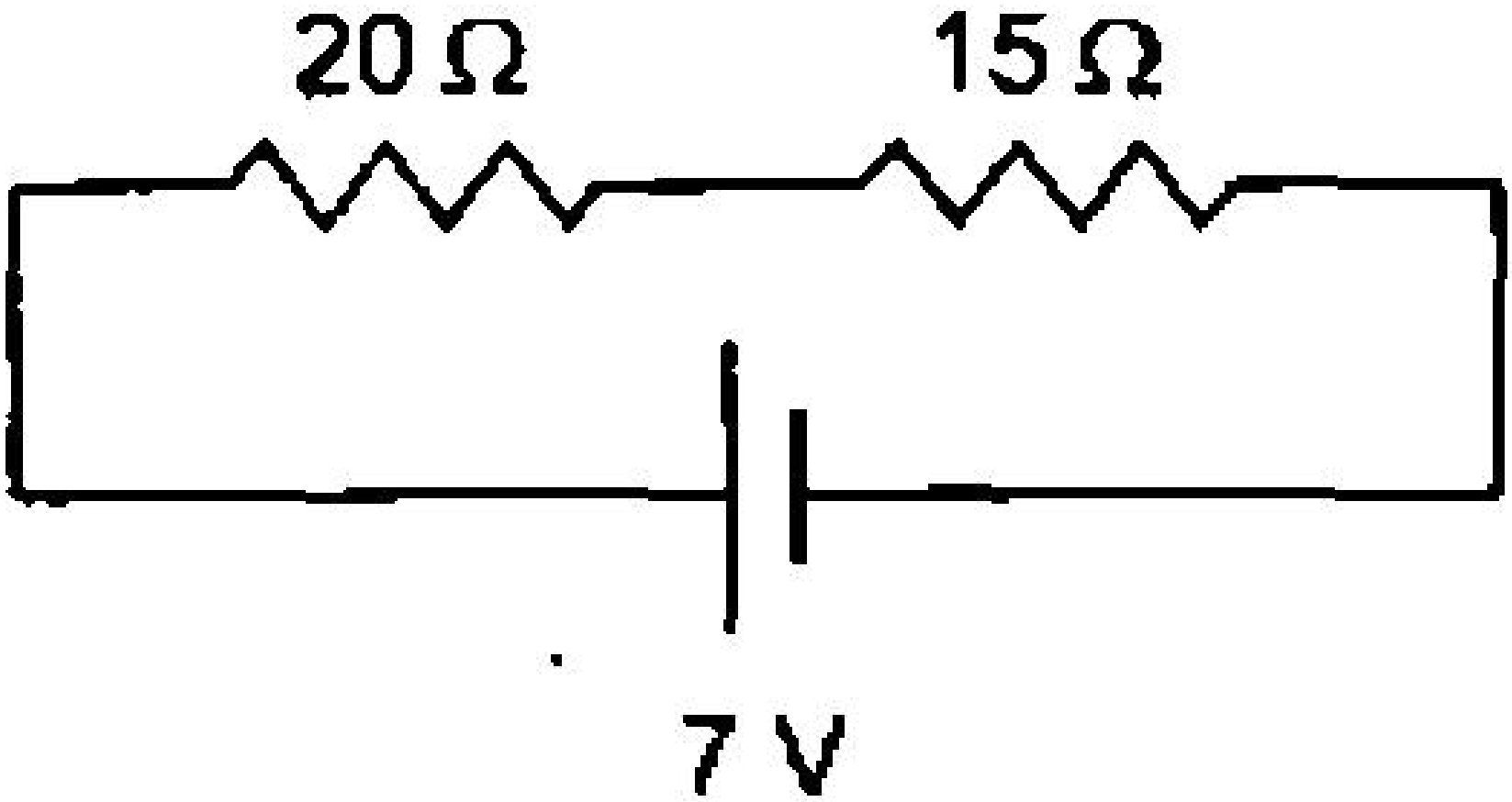
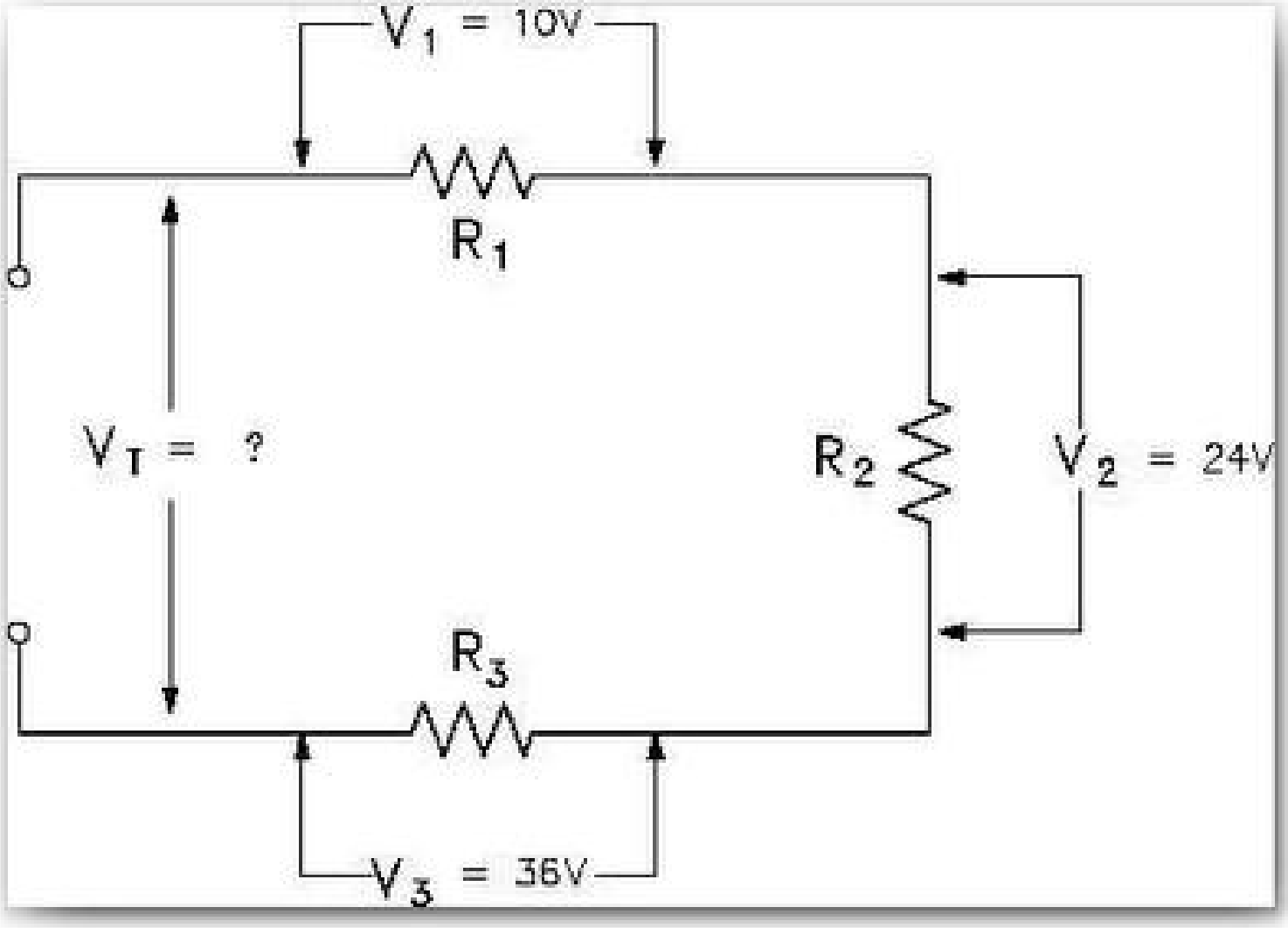
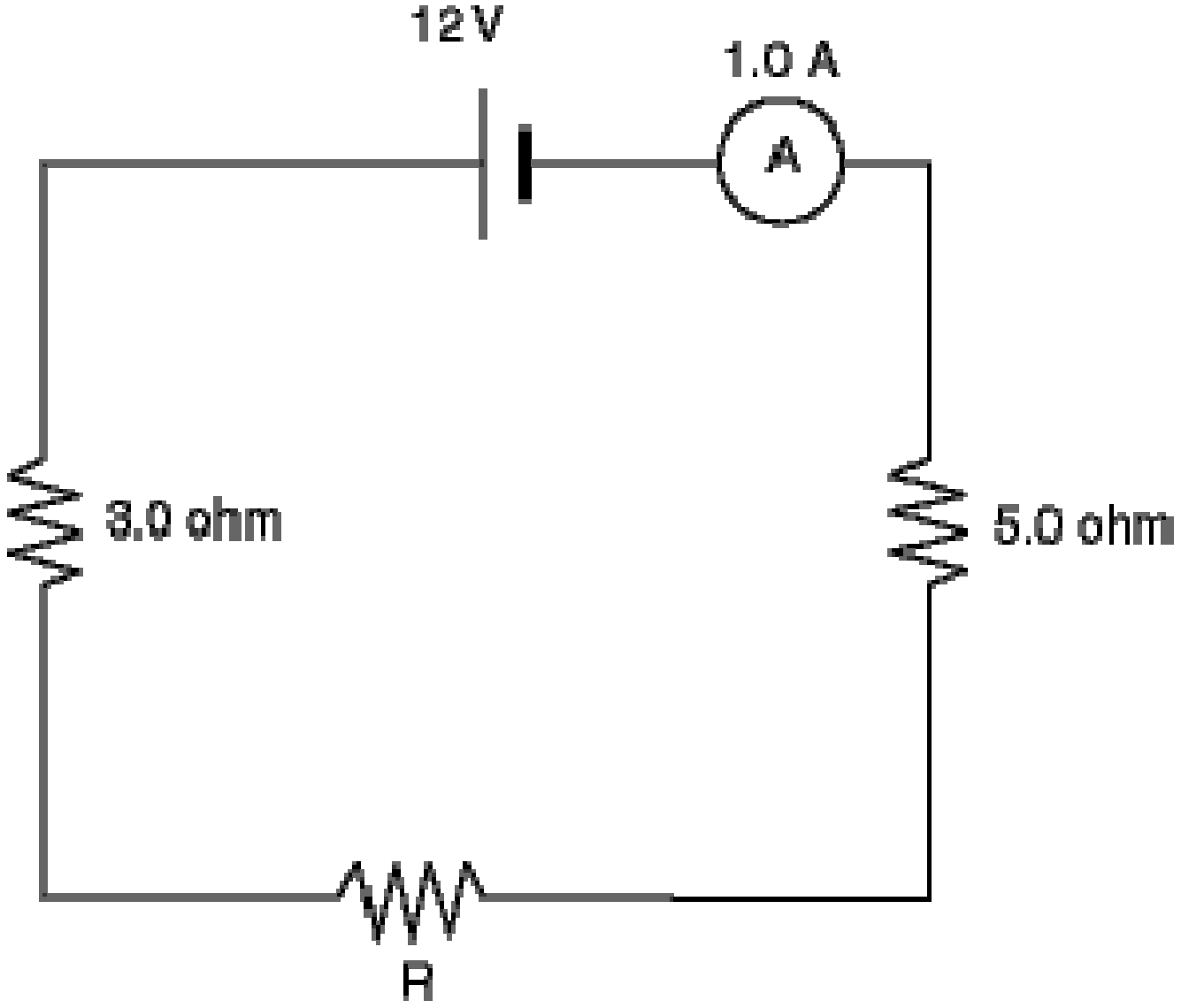


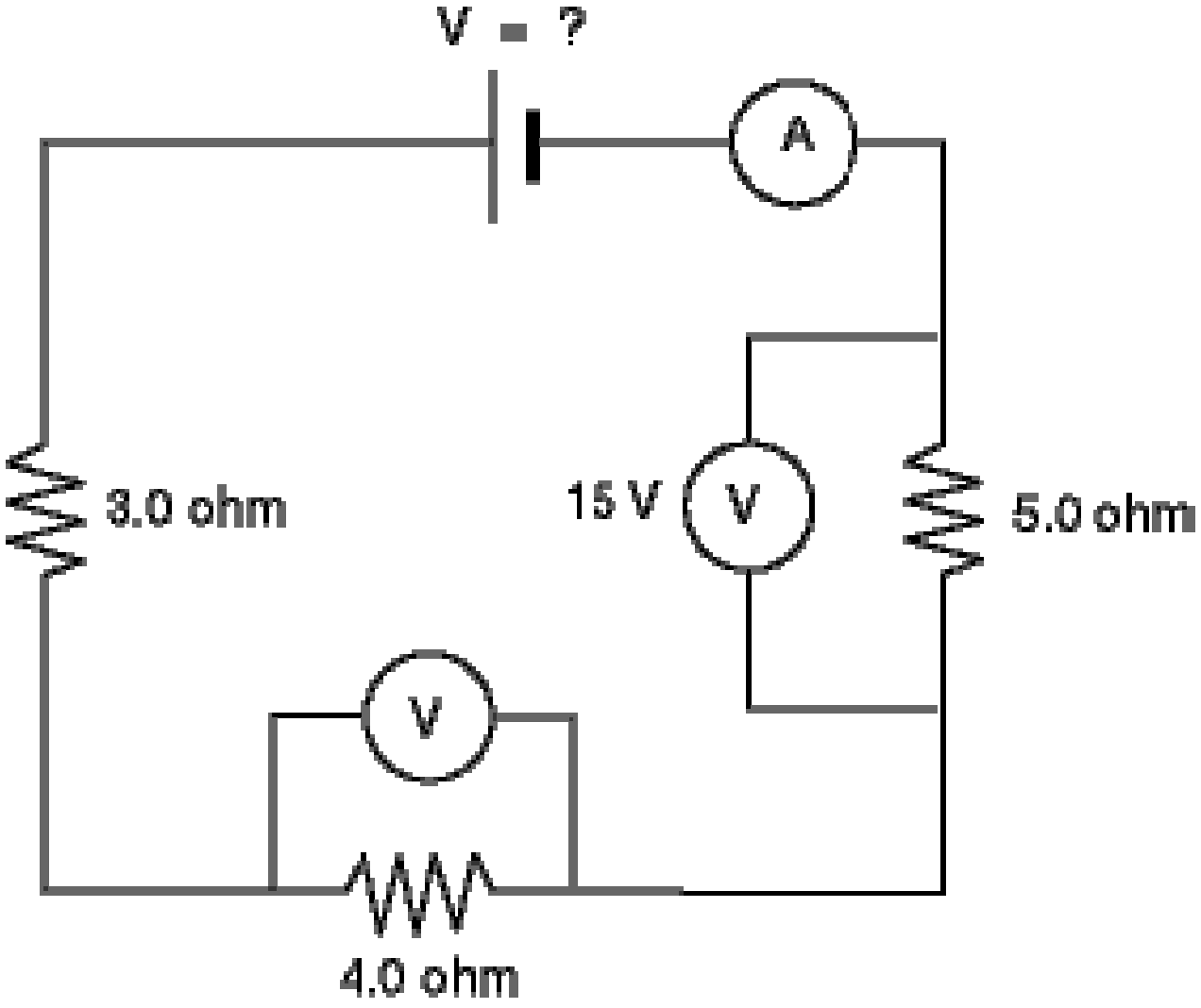
13.Mekkora a feszültség az áramkör végein?



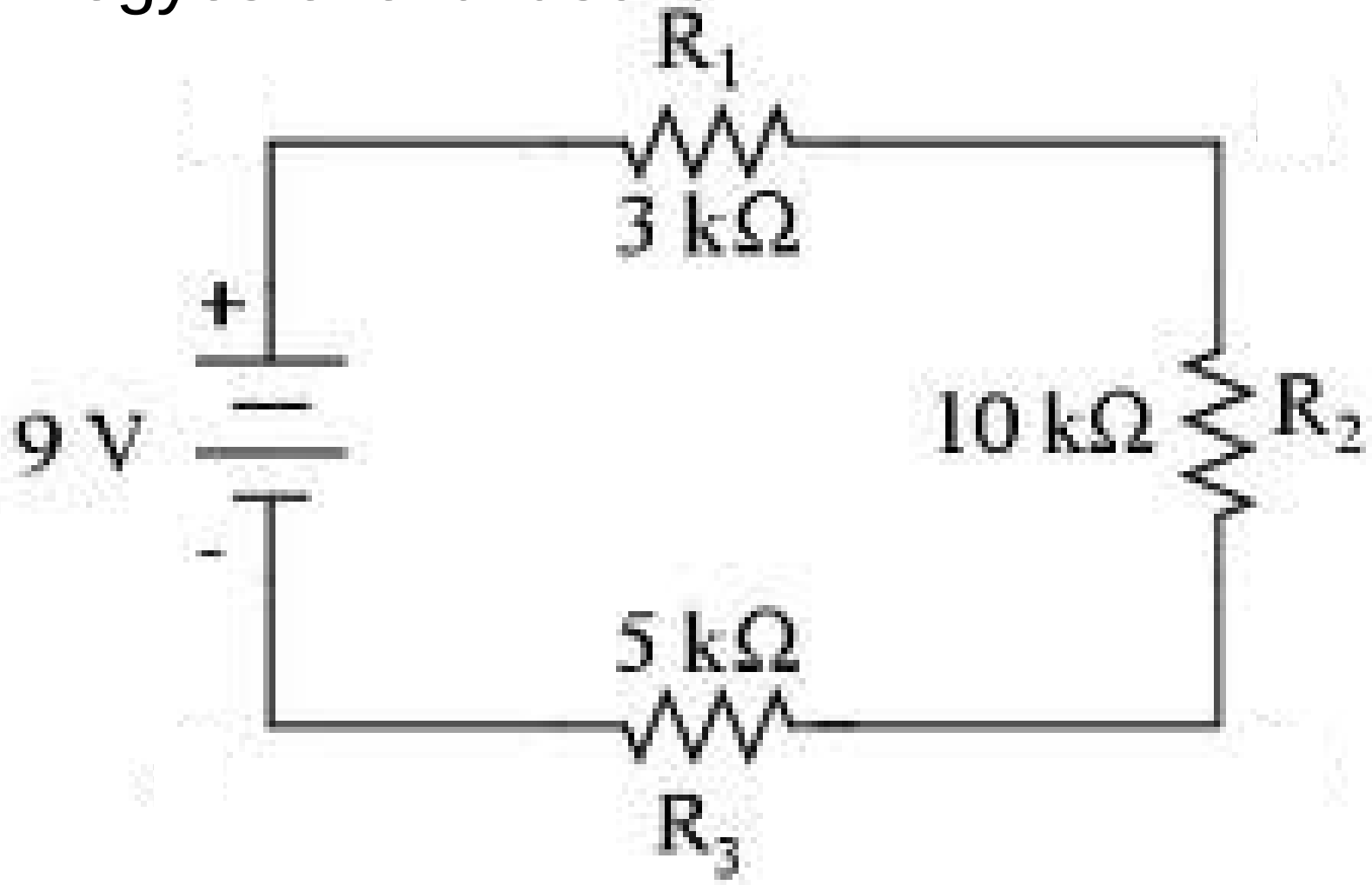
14.Mekkora az ismeretlen ellenállás?



15. Mekkora a feszültség az áramkör végein?



16. Határozd meg az eredő ellenállást, az áramerősséget és a feszültségeket az egyes ellenállásokon.

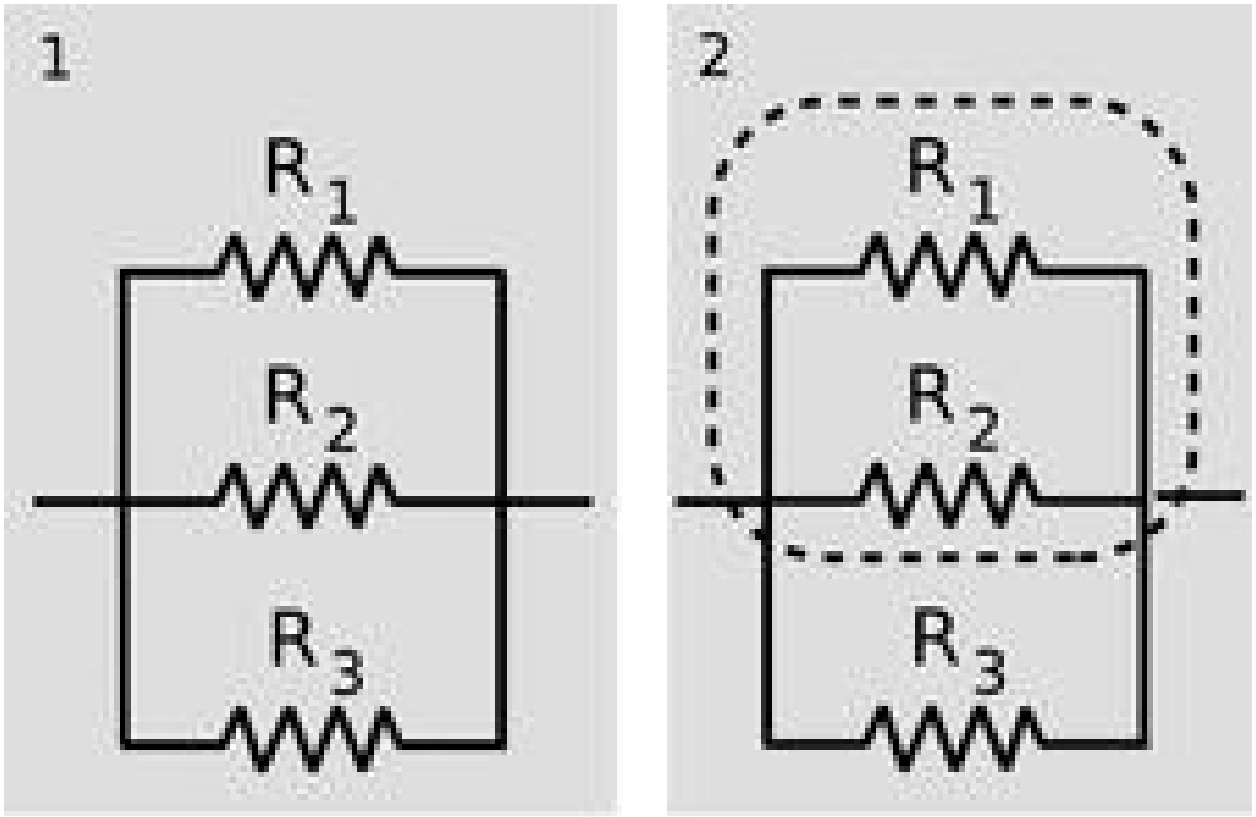


Megoldások (soros)

1. Re=310Ω
2. Re=9Ω
3. Re=19Ω
4. Re=1000Ω, I=0,01A, U1=6V, U2=4V
5. Re=9Ω, I=1,33A, U1=3,99V, U2=2,66V, U3=5,32V
6. Re=6Ω, I=2A, U1=8V, U2=4V
7. Re=5Ω, I=4A, U1=U2=10V
8. Re=5Ω, I=2,4A, U1=2,4V, U2=U3=4,8V

9. Re=6Ω, I=2A, U1=8V, U2=4V
10. Re=10Ω, I=1,2A, U1=4,8V, U2=7,2V
11. Re=2,5Ω, I=2A, U1=1V, U2=4V
12. Re=35Ω, I=0,2A, U1=4V, U2=3V
13. U=70V
14. R=12Ω, R3=4Ω
15. I=3A, U1=12V, U2=9V, U3=15V, U=36V
16. Re=18000Ω, I=0,0005A, U1=1,5V, U2=5V, U3=2,5V

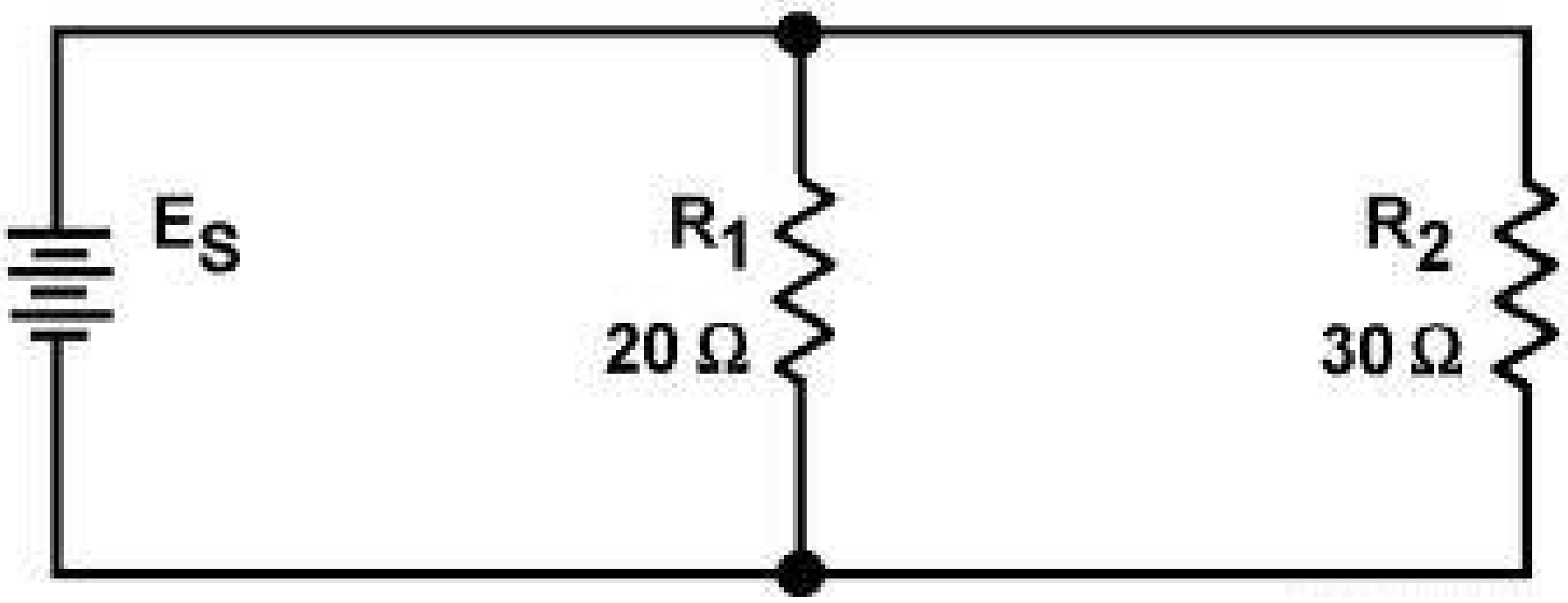
Párhuzamos kapcsolás


1
R 1
R 2
R 3
2
R 1
R 2
R 3
3
R 1 and 2
R 3

$$\frac{1}{R_{total}} = \frac{1}{R1} + \frac{1}{R2} + \frac{1}{R3} + \ldots$$

$$R_{total} = \frac{R1 \times R2}{R1 + R2}$$

17.) Határozd meg az ered Ő ellenállást.



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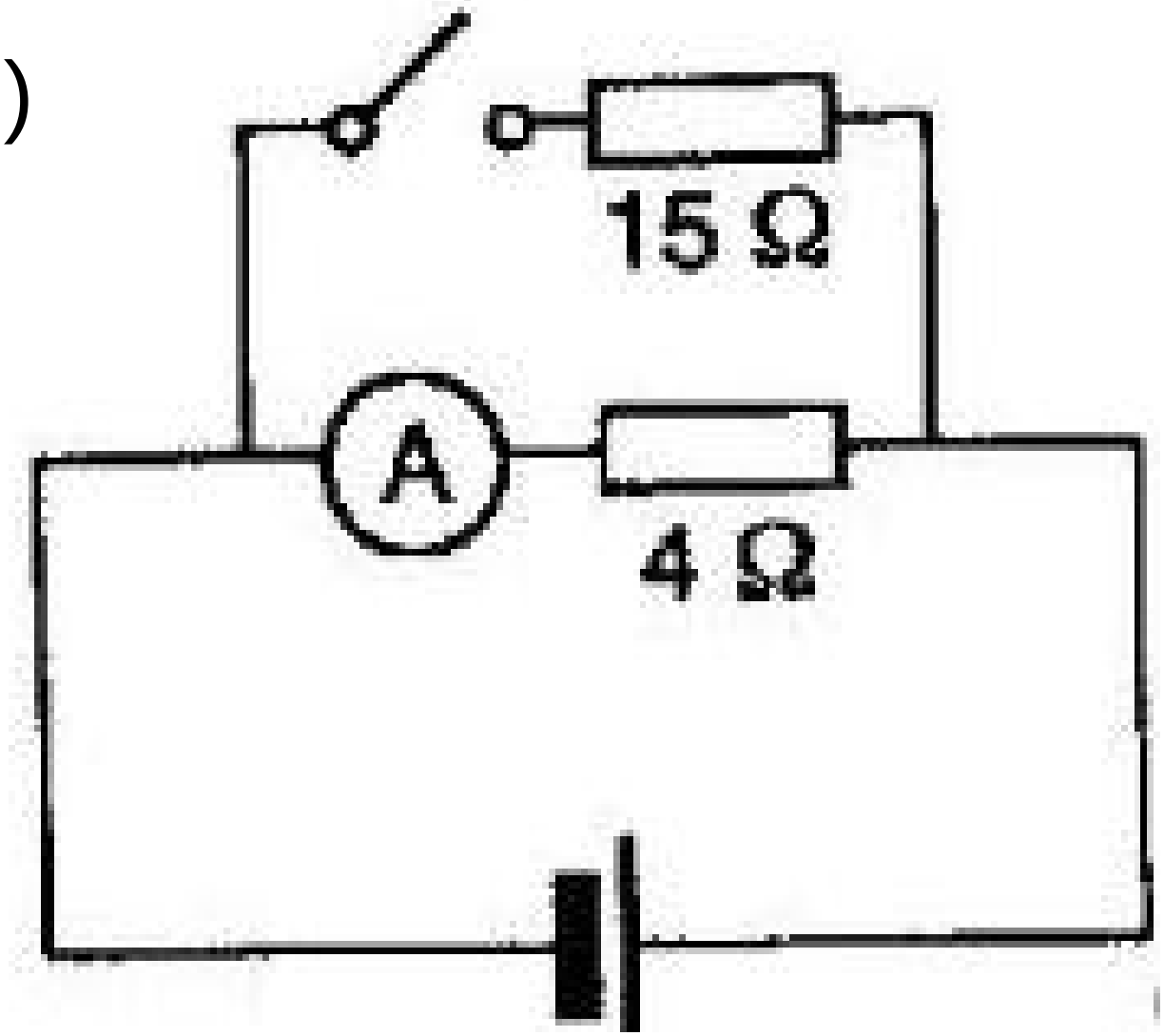

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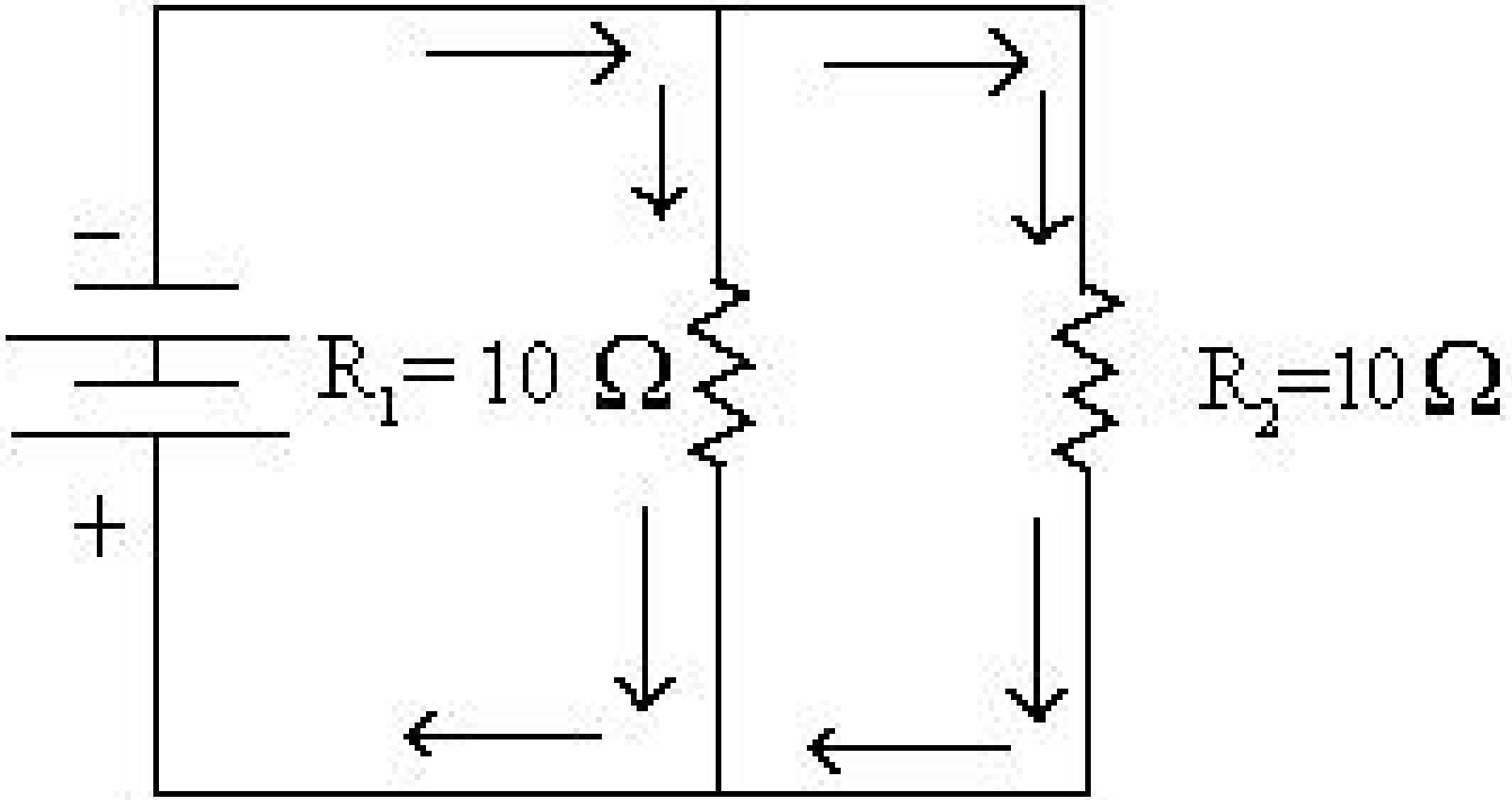

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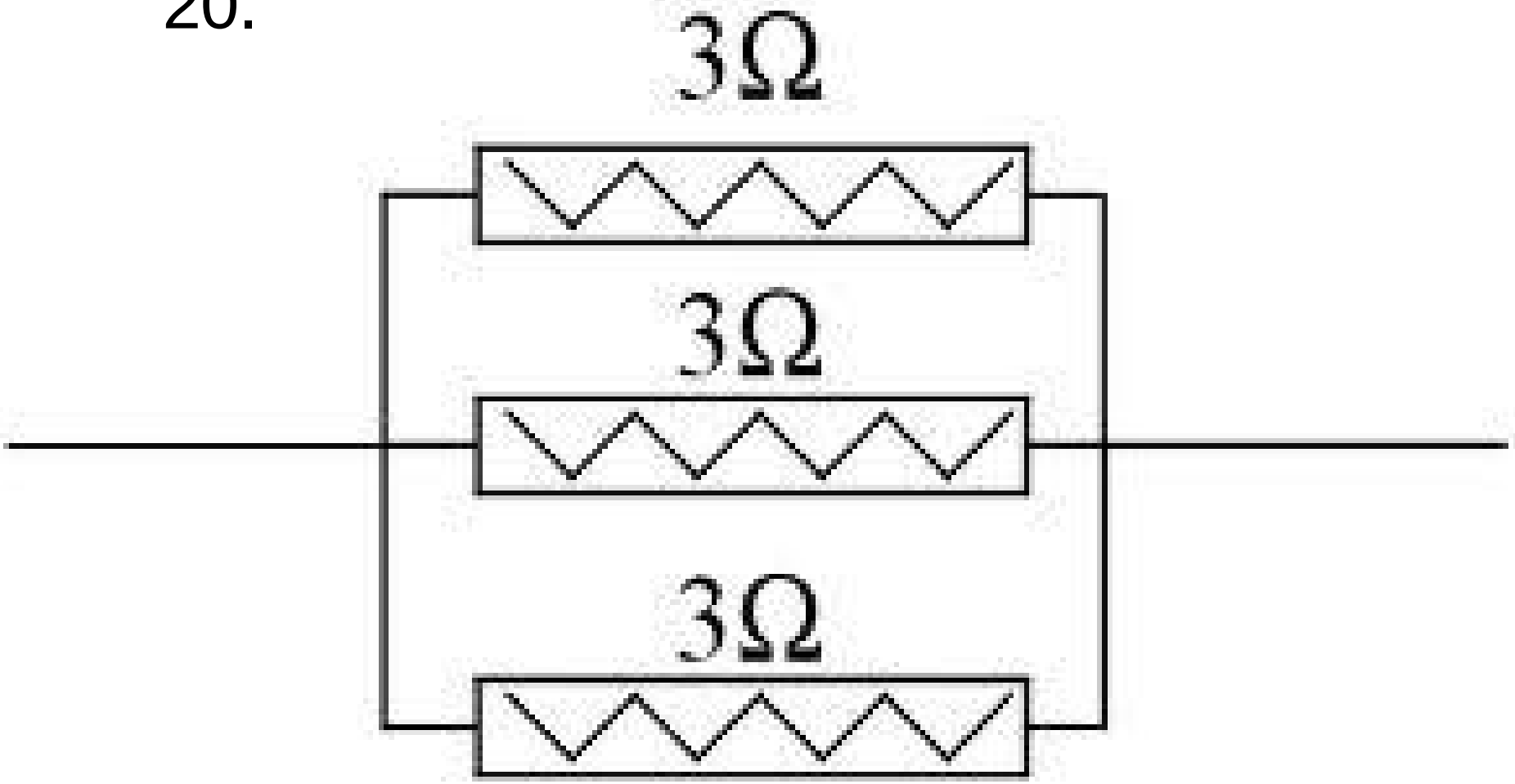

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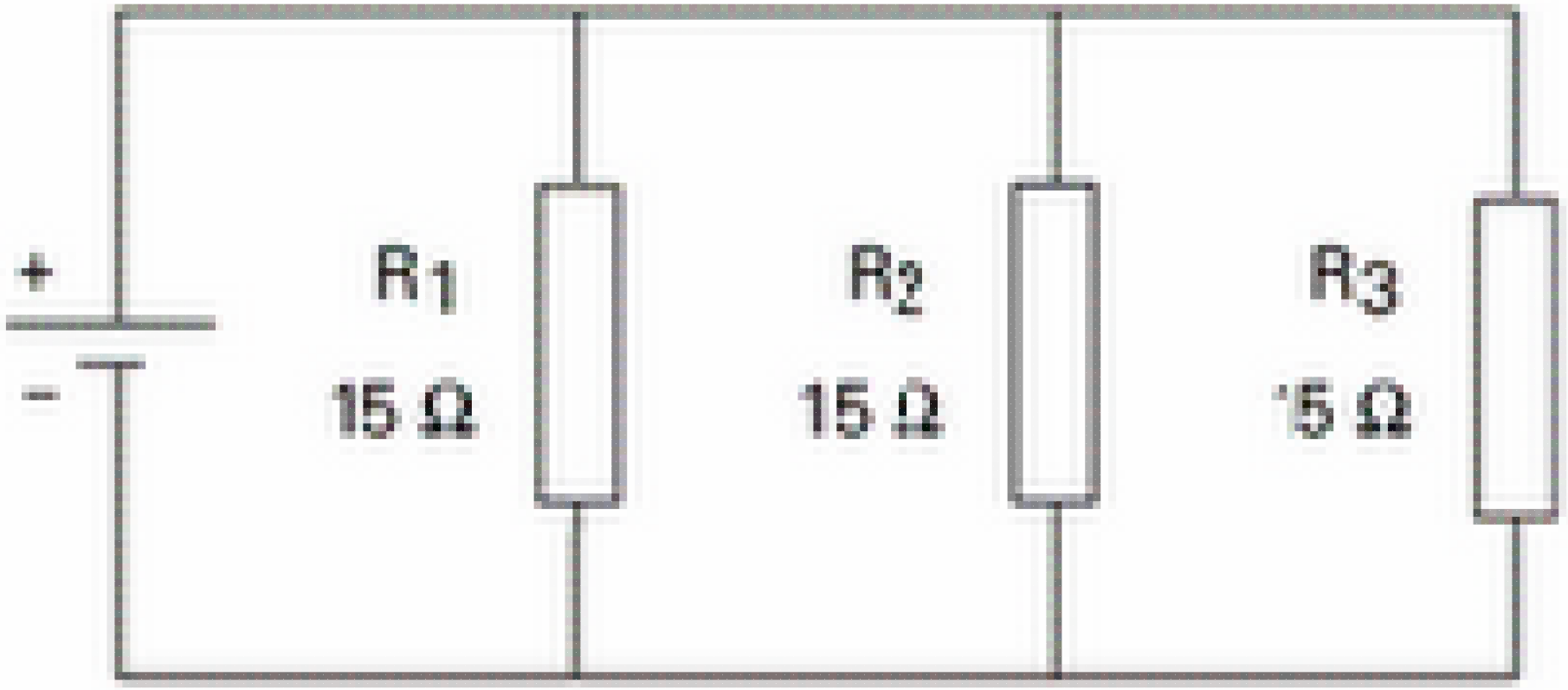

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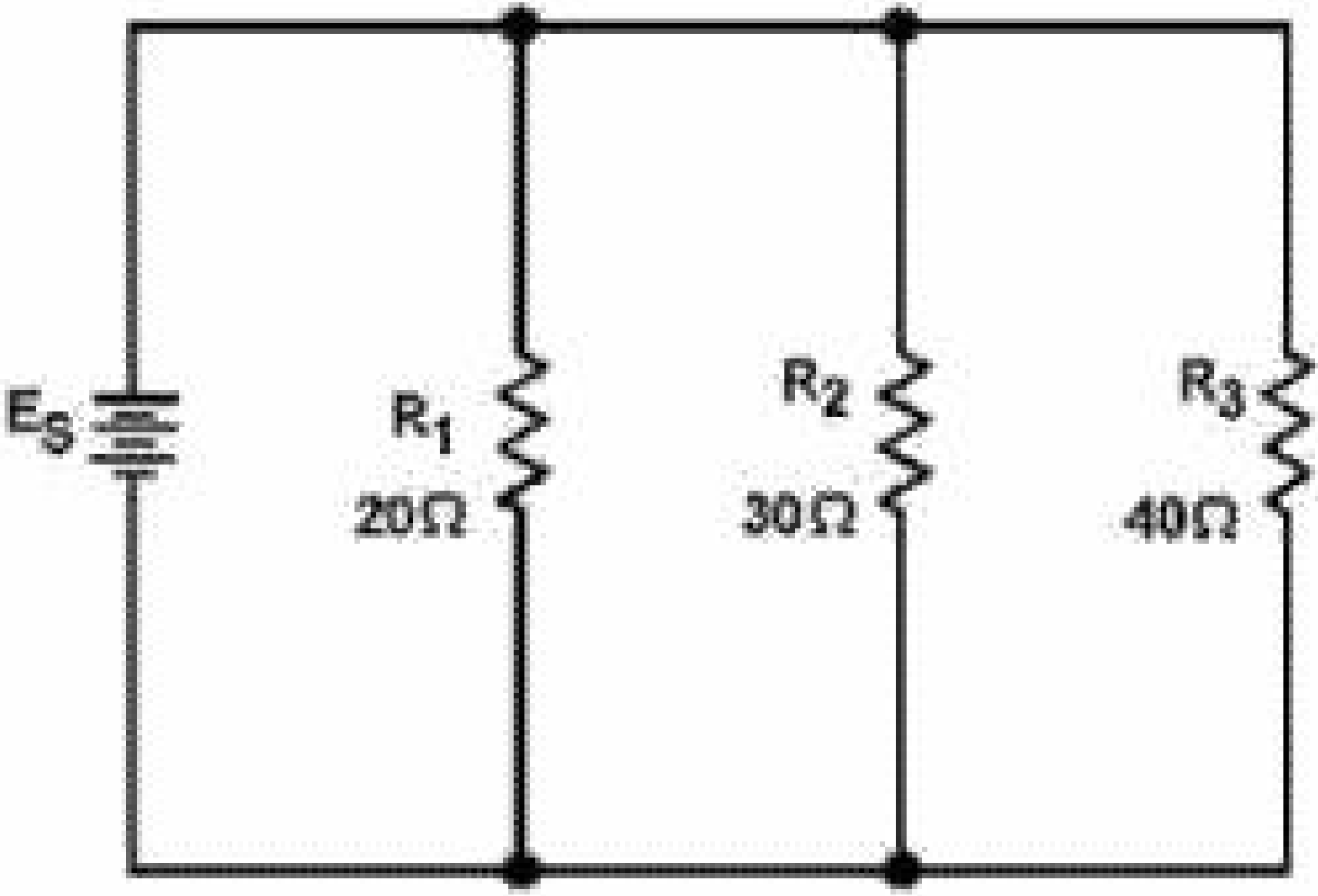

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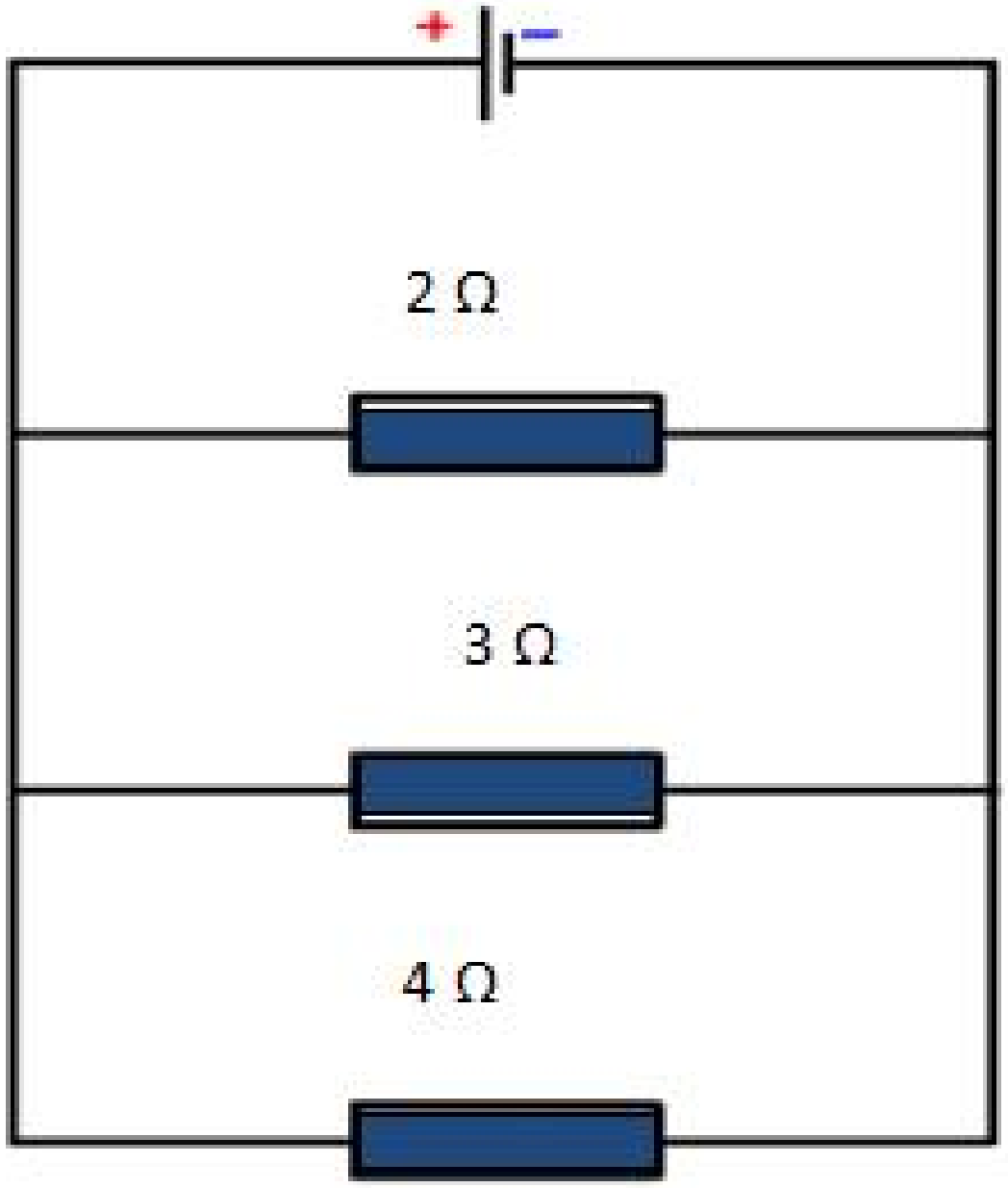

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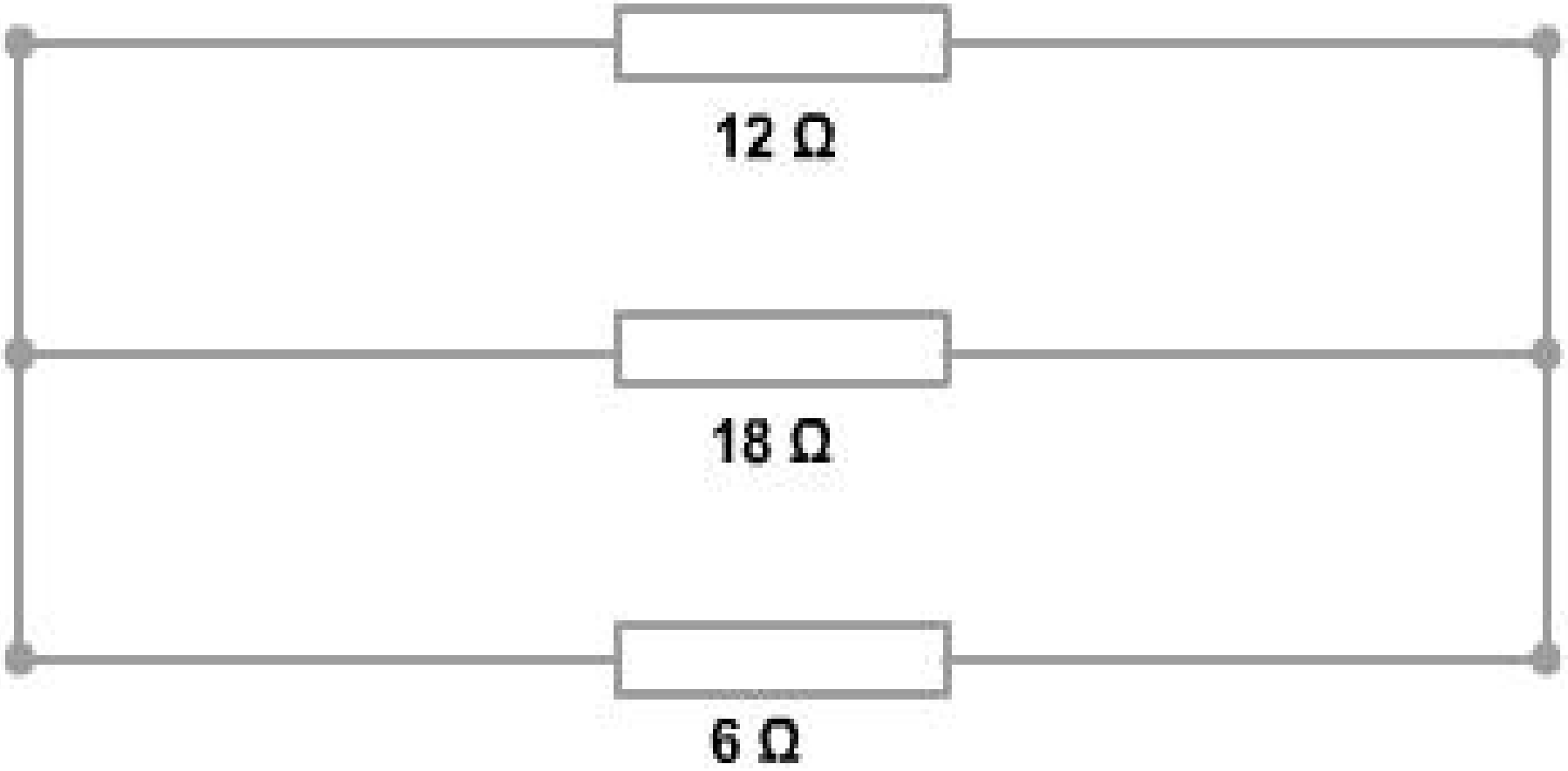

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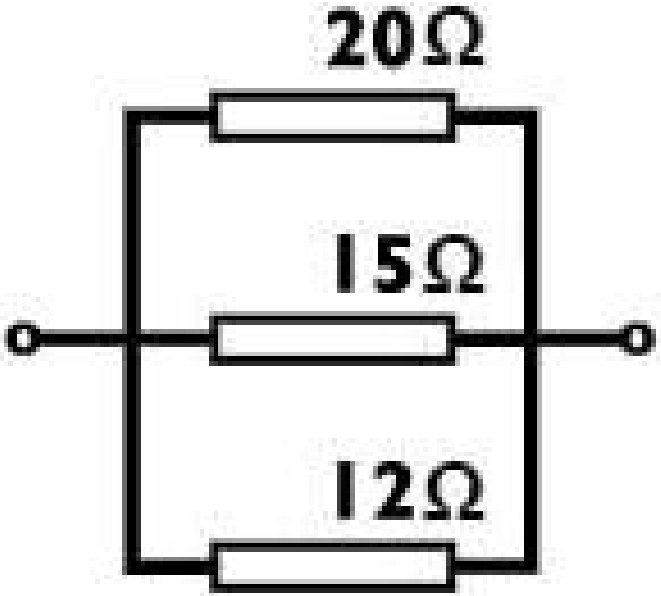

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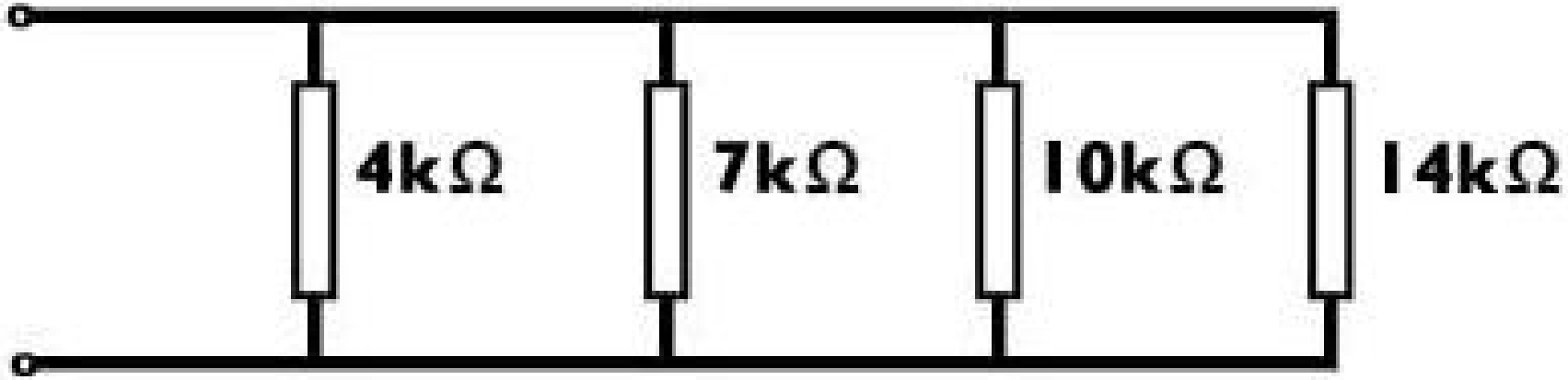

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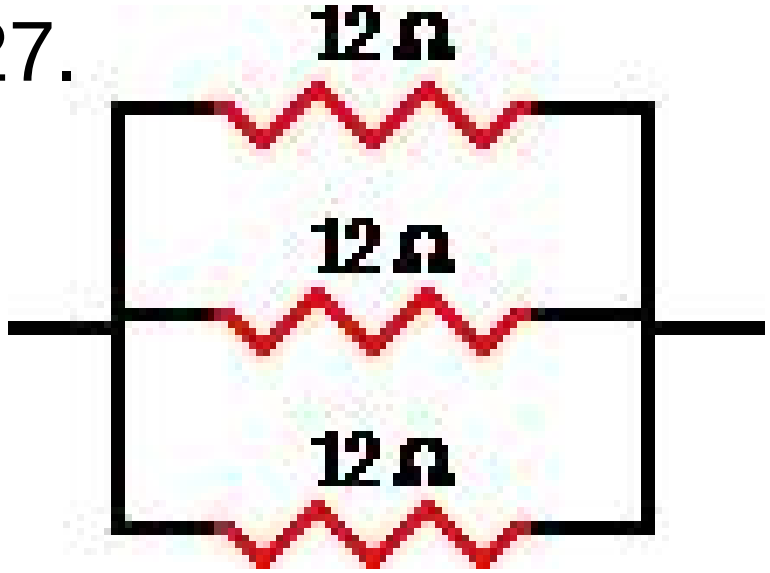

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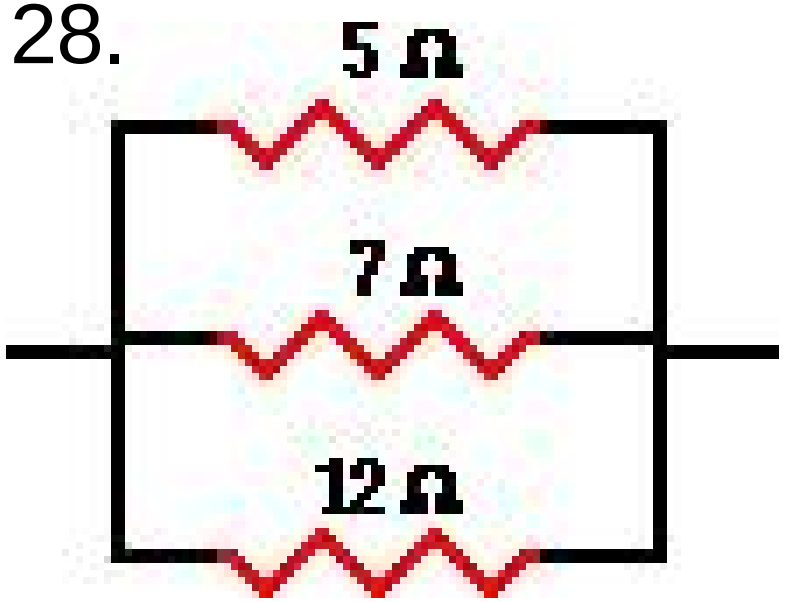

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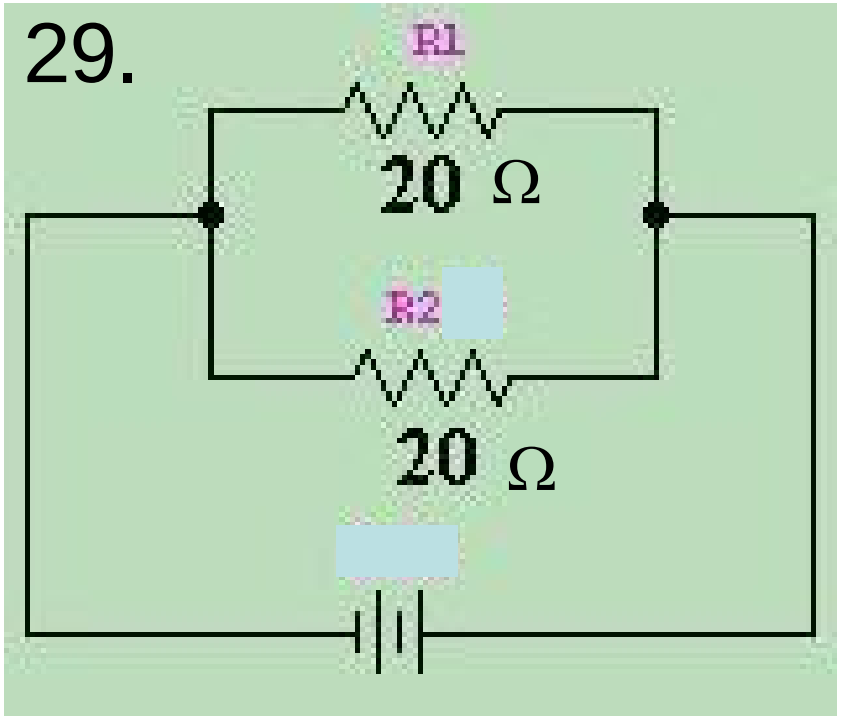

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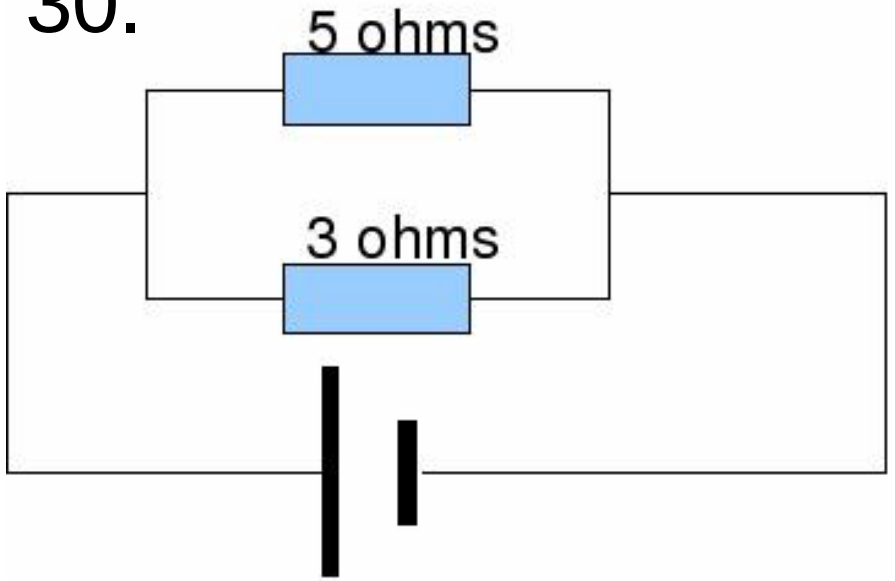
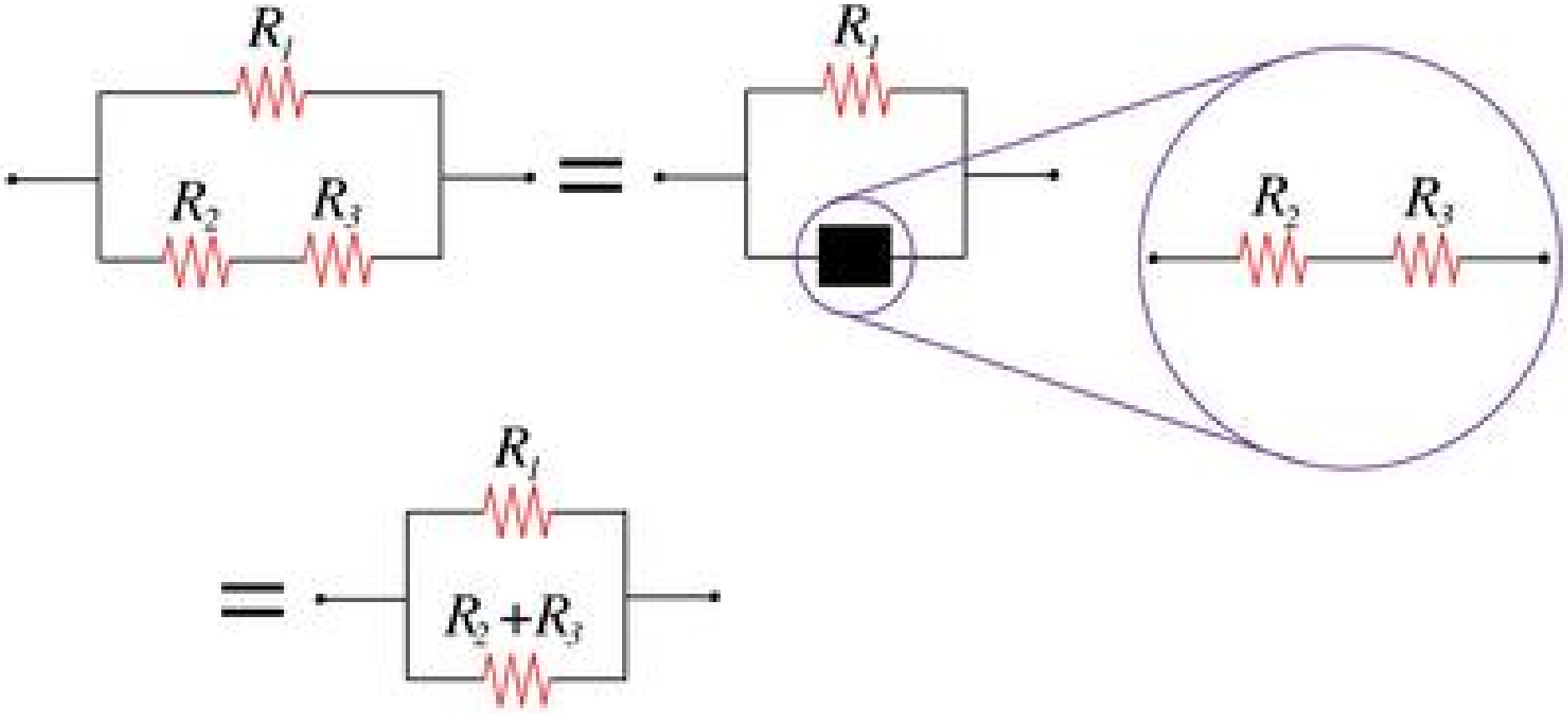
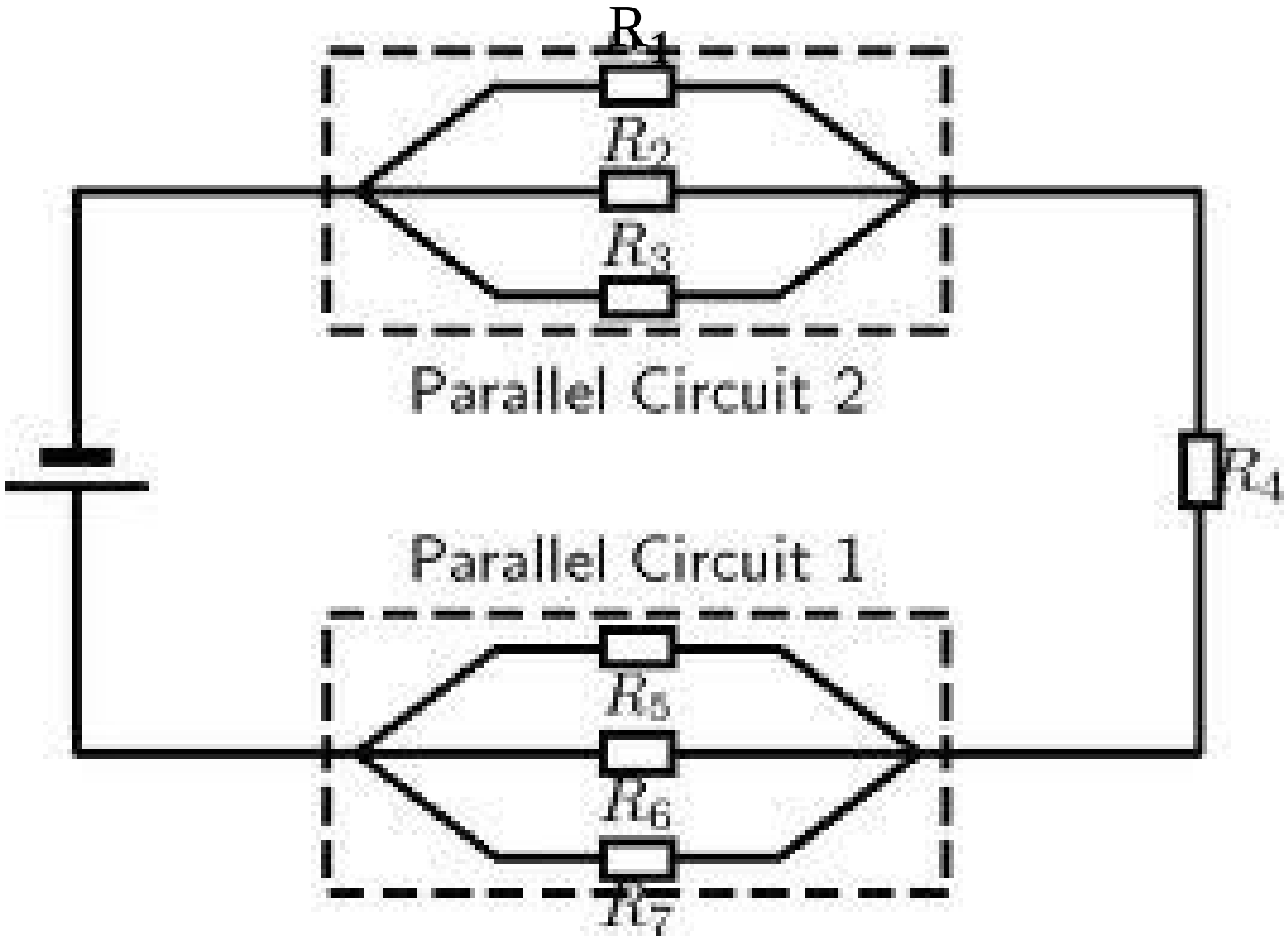


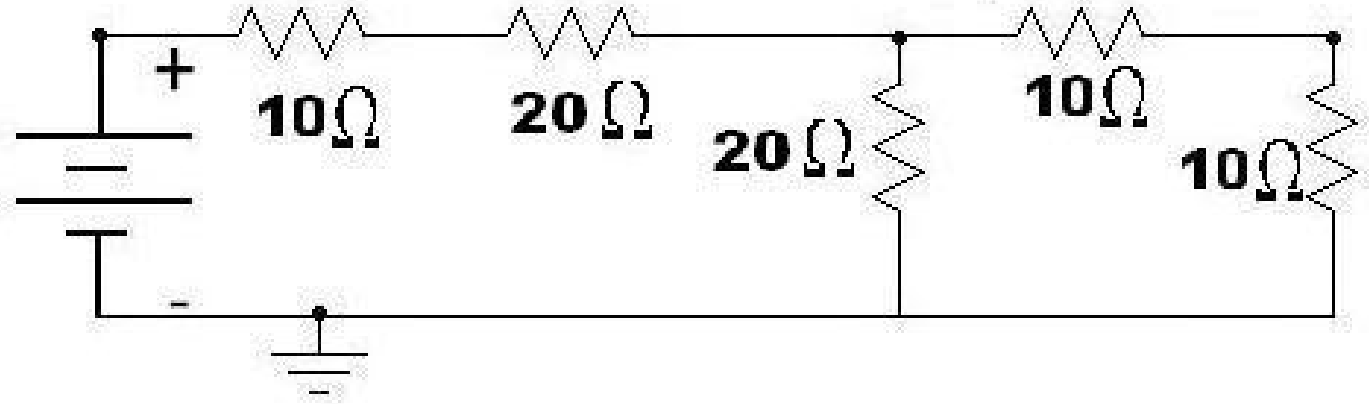
Megoldások (párhuzamos)

17. 12Ω
18. 3,15Ω
19. 5Ω
20. 1Ω
21. 5Ω
22. 9,23Ω
23. 0,92Ω
24. 3,27 Ω
25. 5Ω
26. 1,75 Ω
27. 4Ω
28. 2,4Ω
29. 10 Ω
30. 1,875Ω

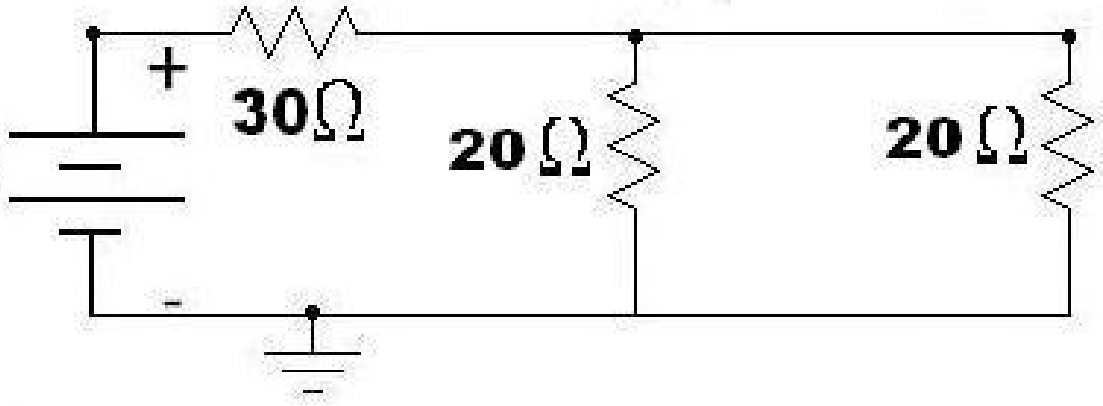
Vegyes kapcsolás



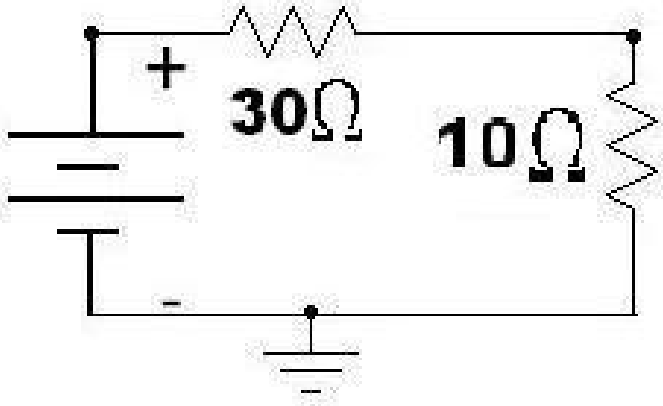

R1
R2
R3
Parallel Circuit 2
R4
Parallel Circuit 1
R5
R6
R7



After combining series resistors =

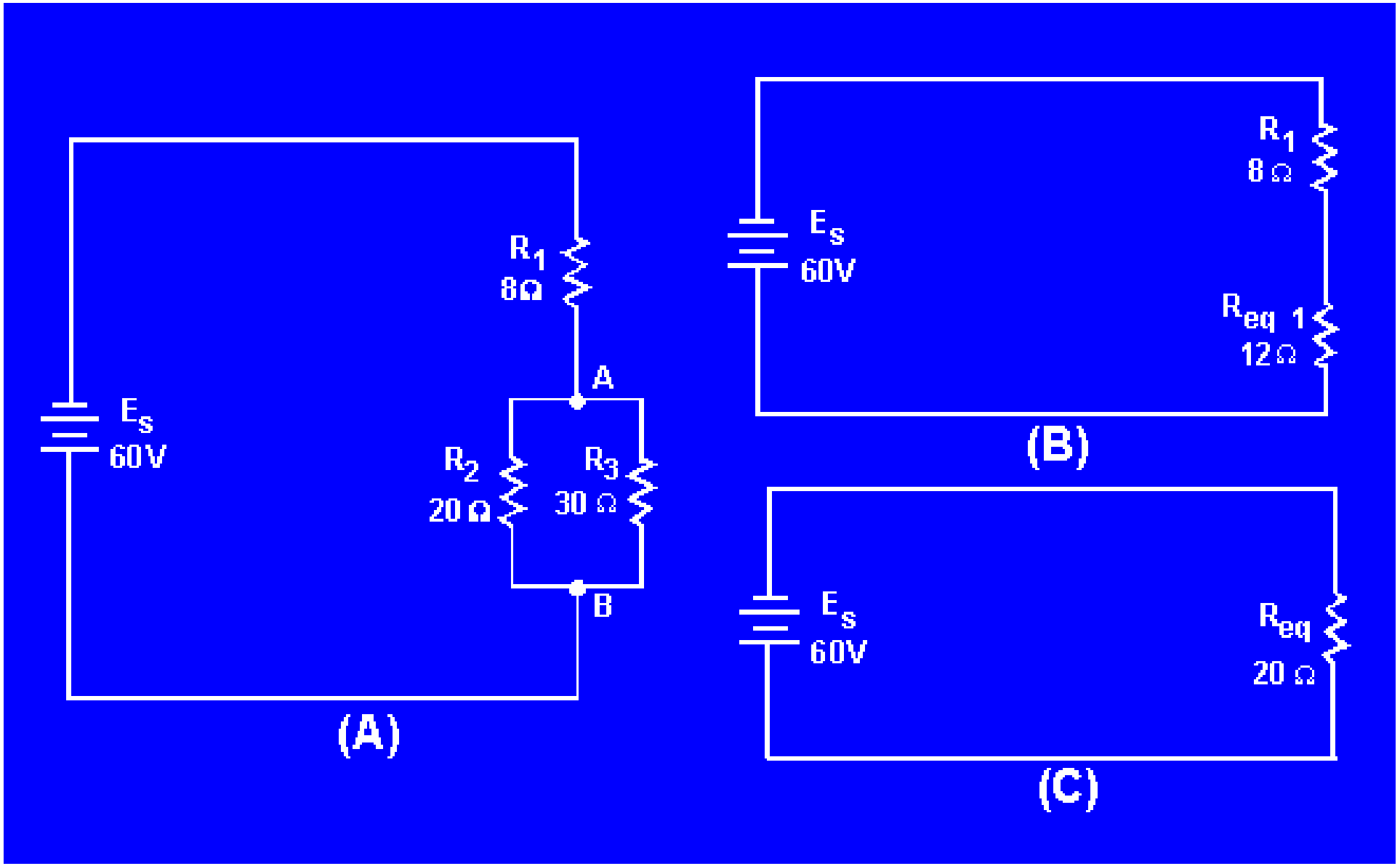


After combining parallel resistors =

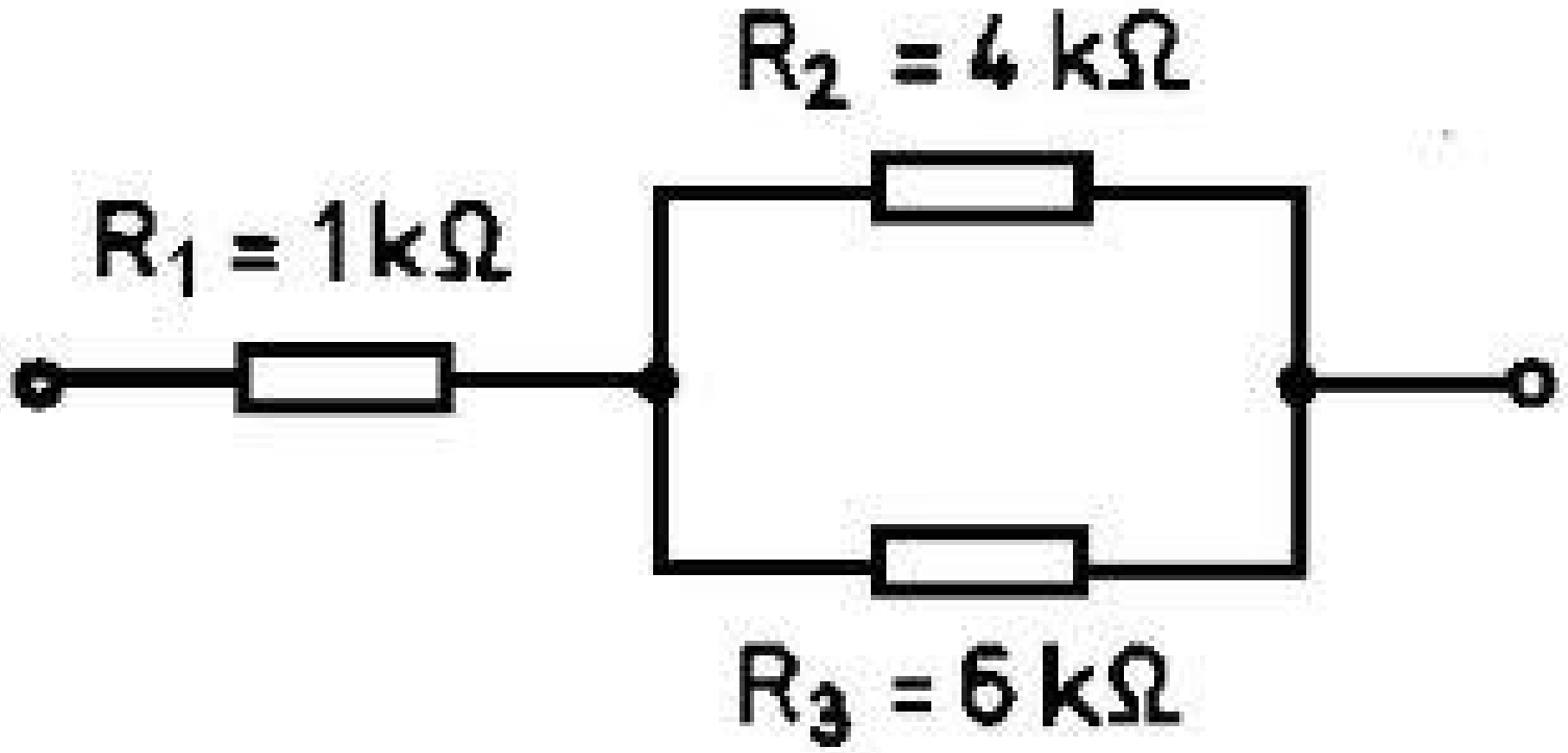


Final

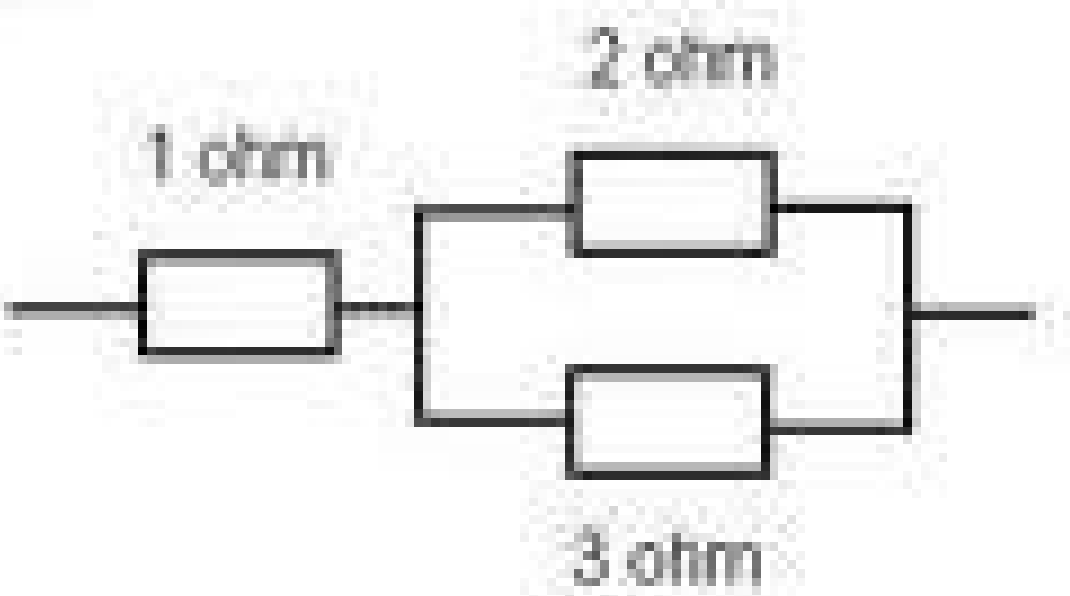
Req = 40Ω


R1
8Ω
A
Es
60V
R2
20 Ω
R3
30 Ω
B
(A)
R1
8 Ω
Es
60V
Req 1
12 Ω
(B)
Es
60V
Req
20 Ω
(C)

31.Határozd meg az eredő ellenállást.



32.



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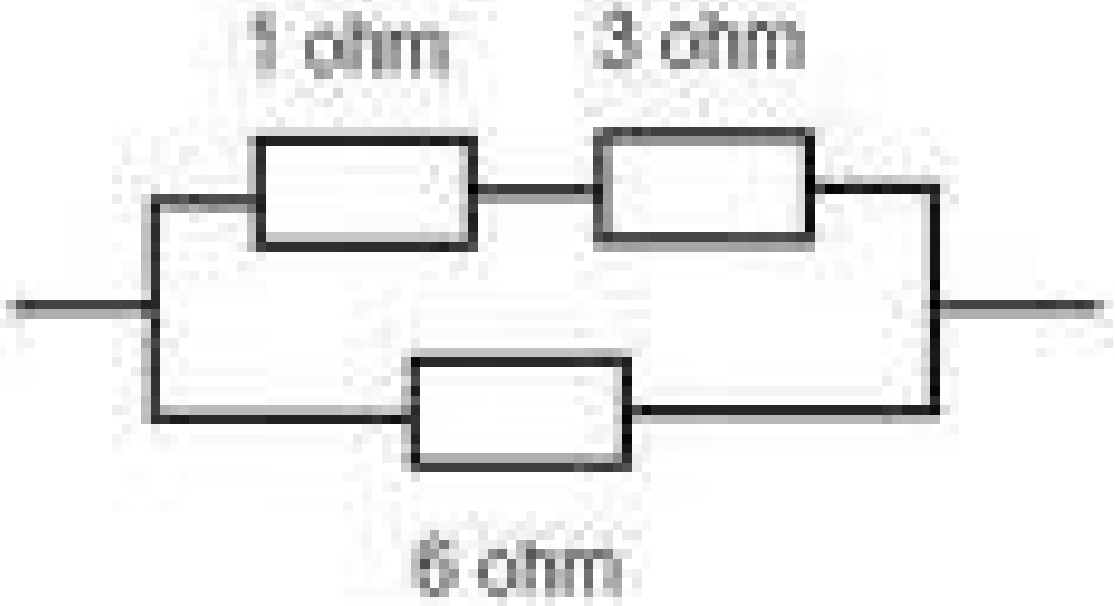

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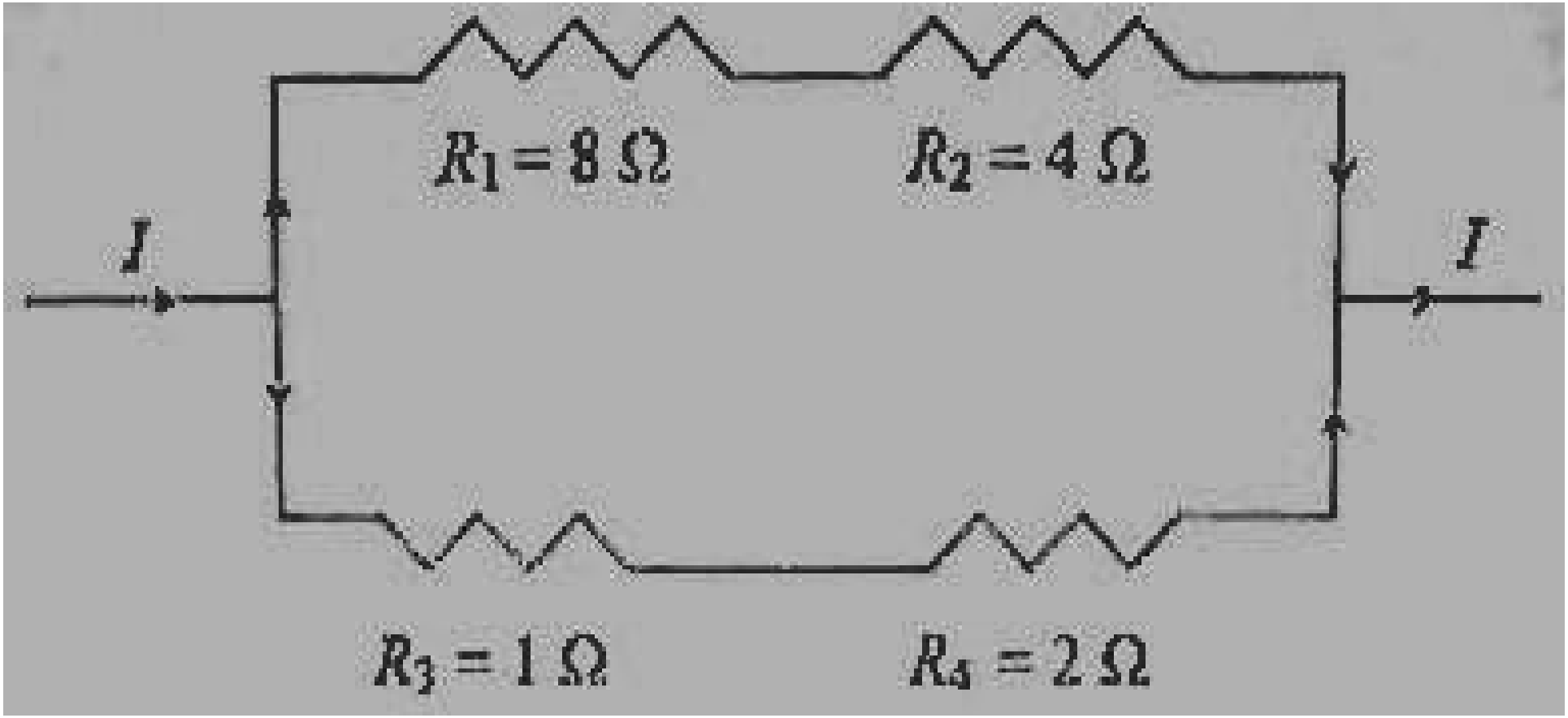

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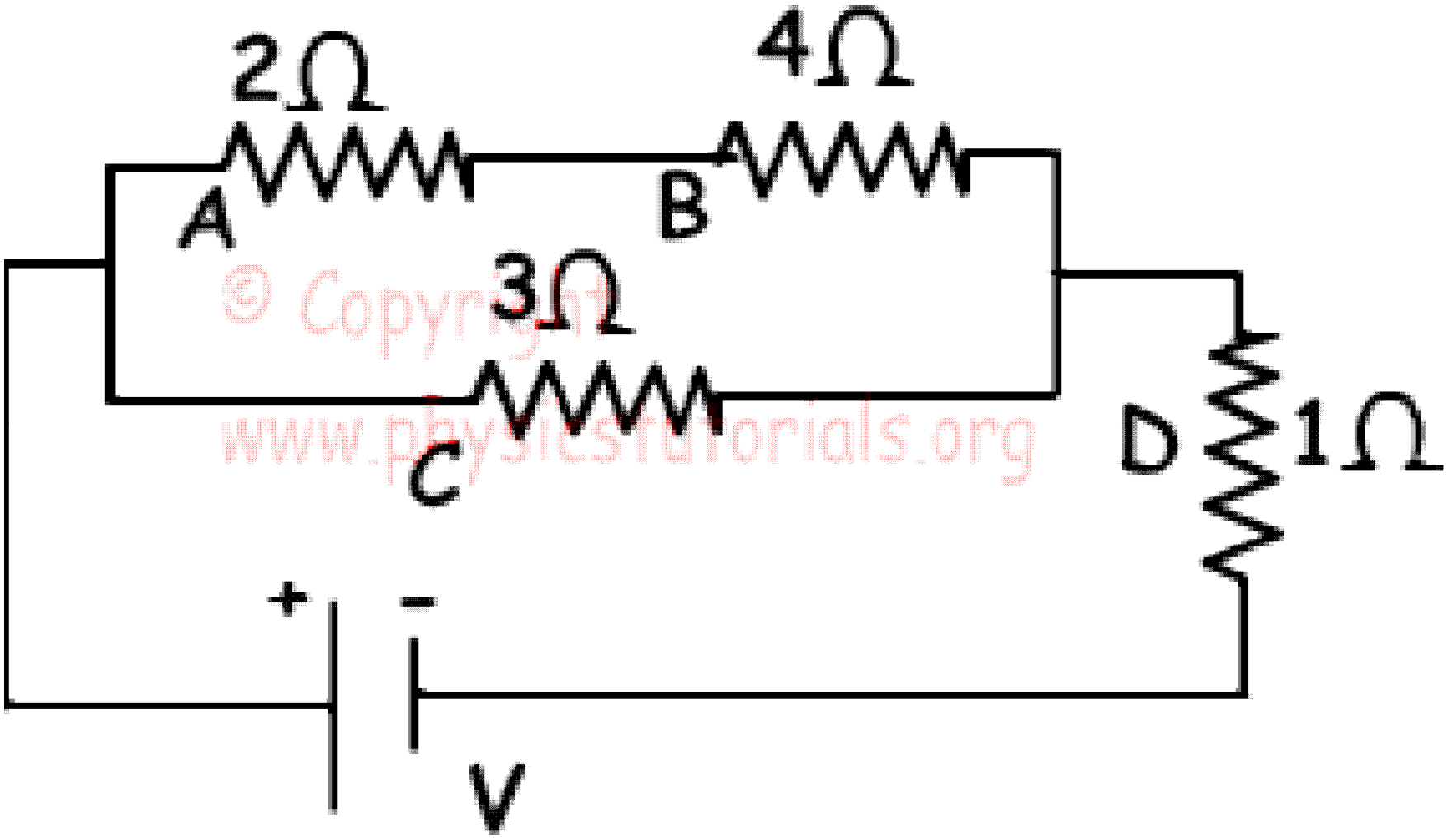

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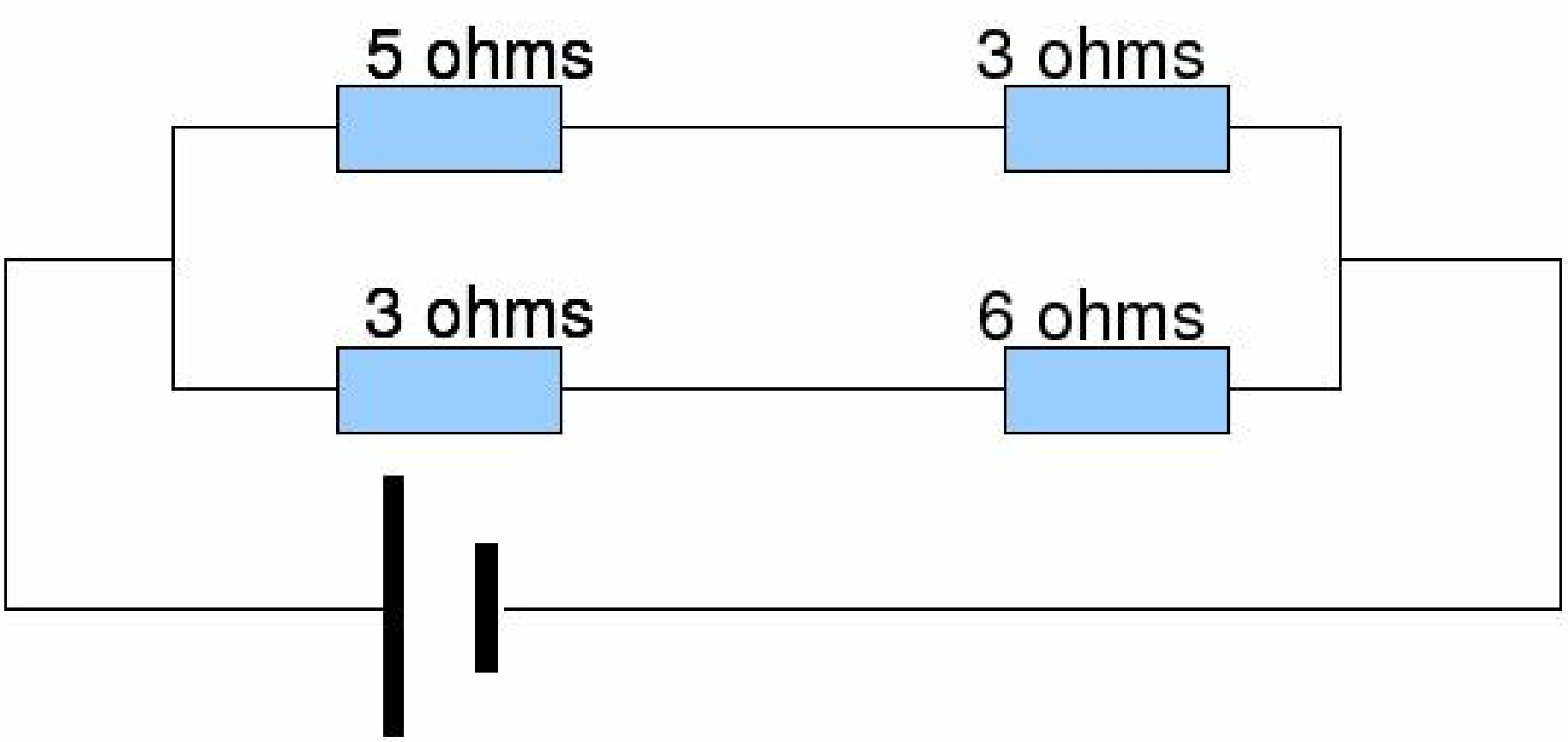
36.



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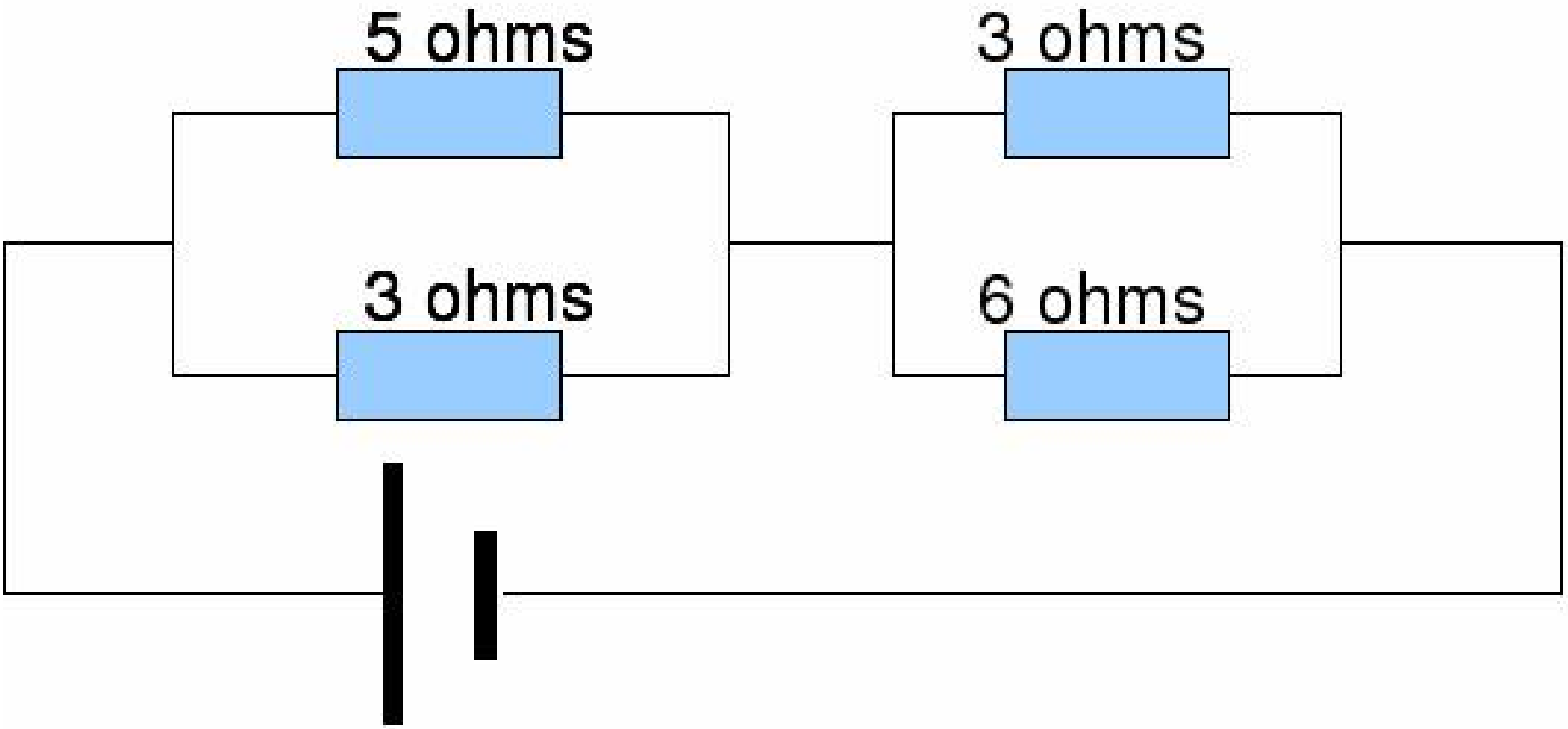

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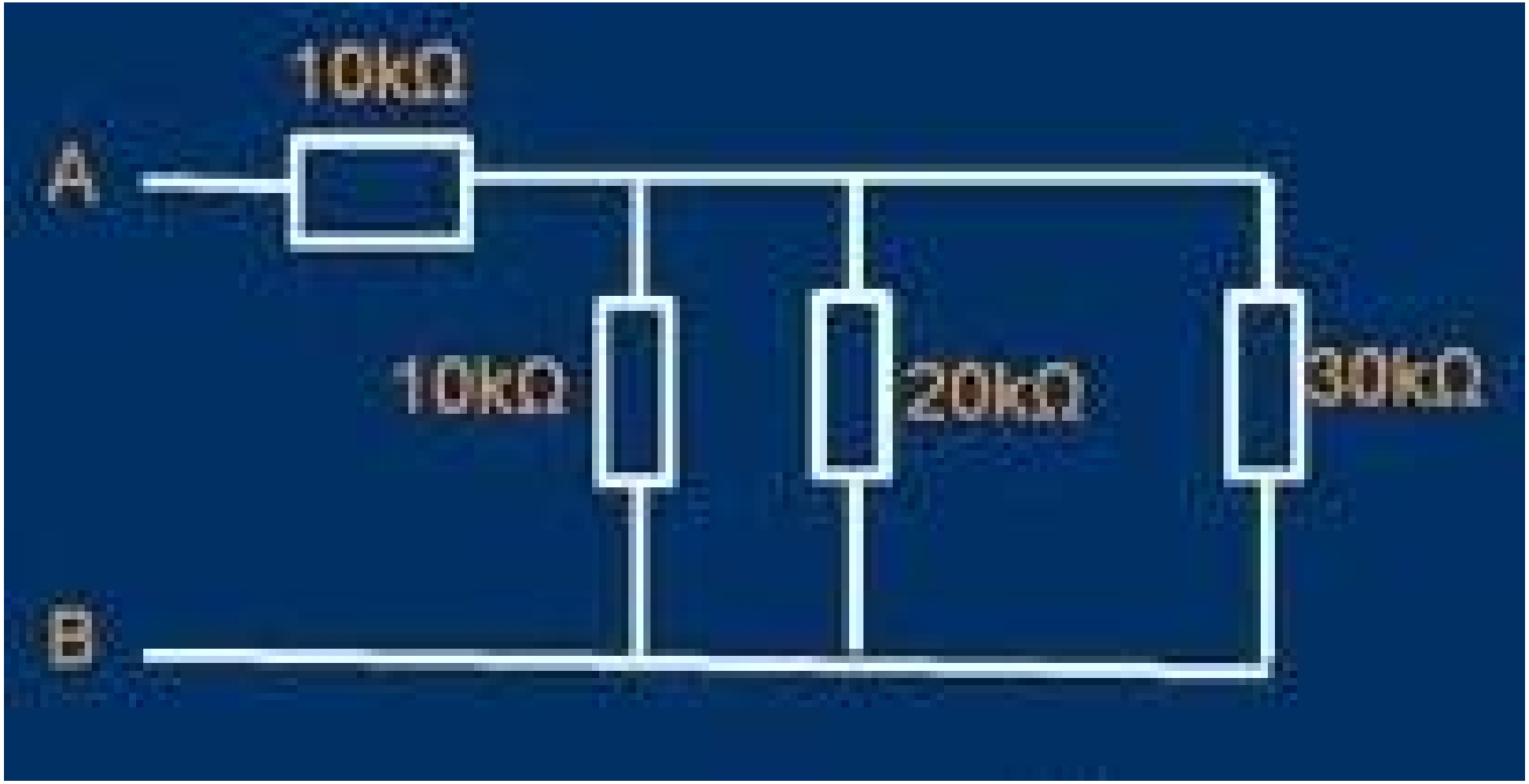

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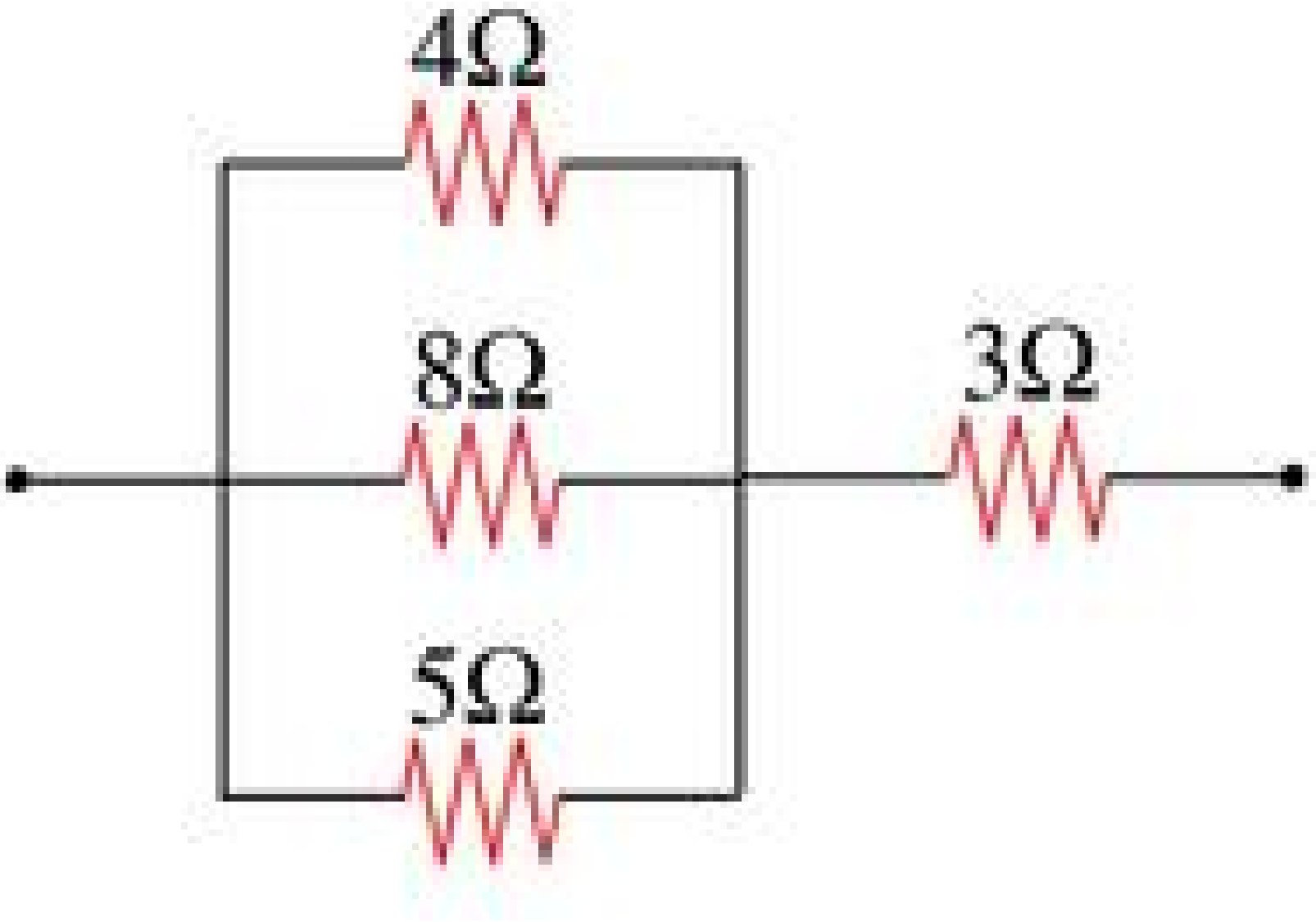

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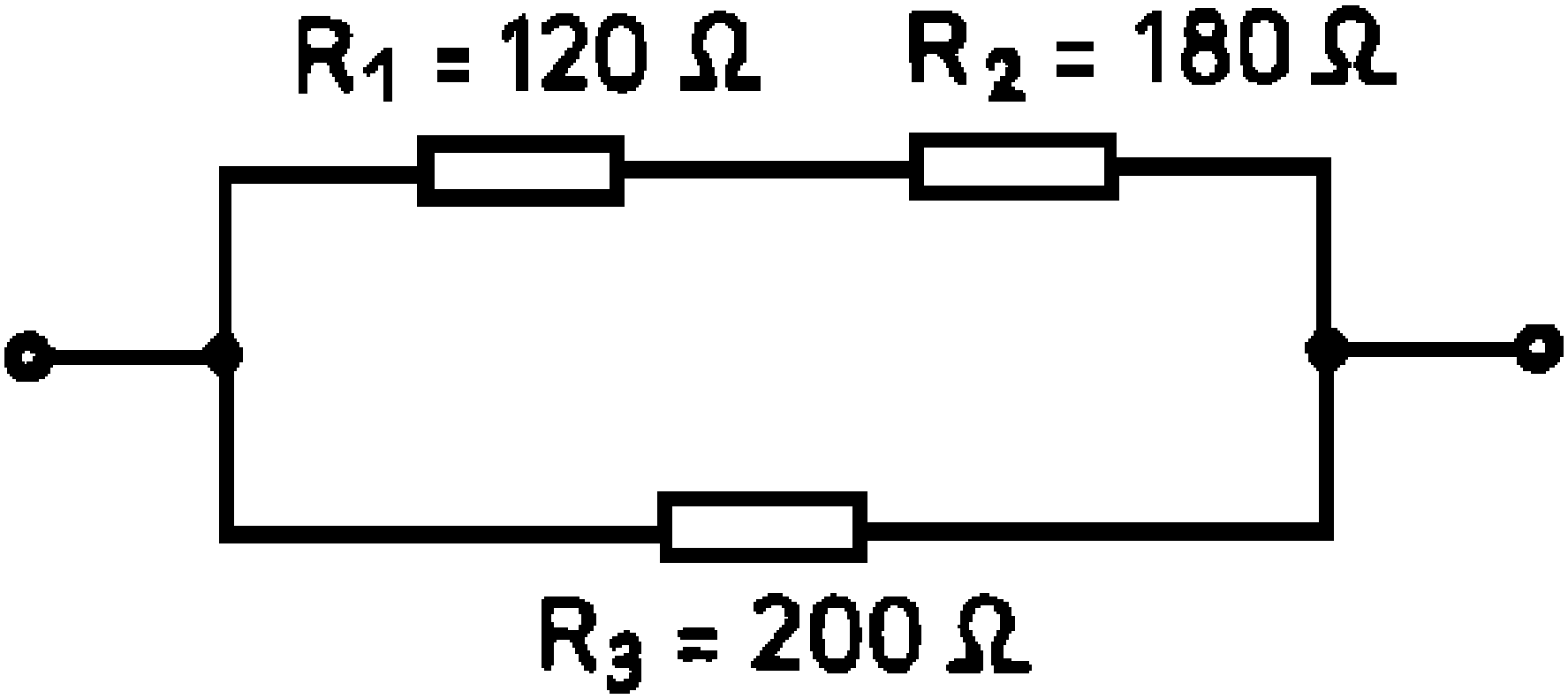

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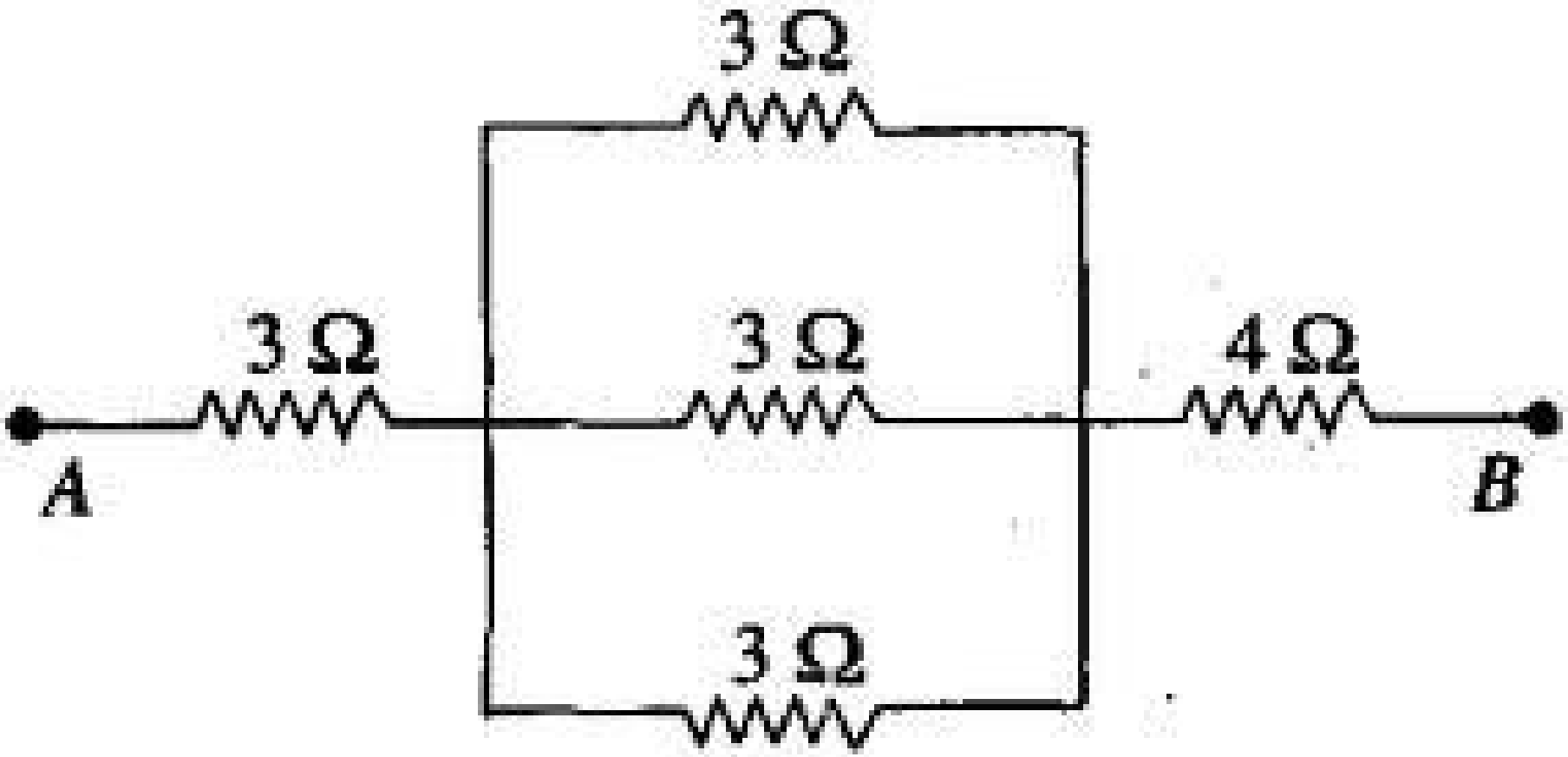

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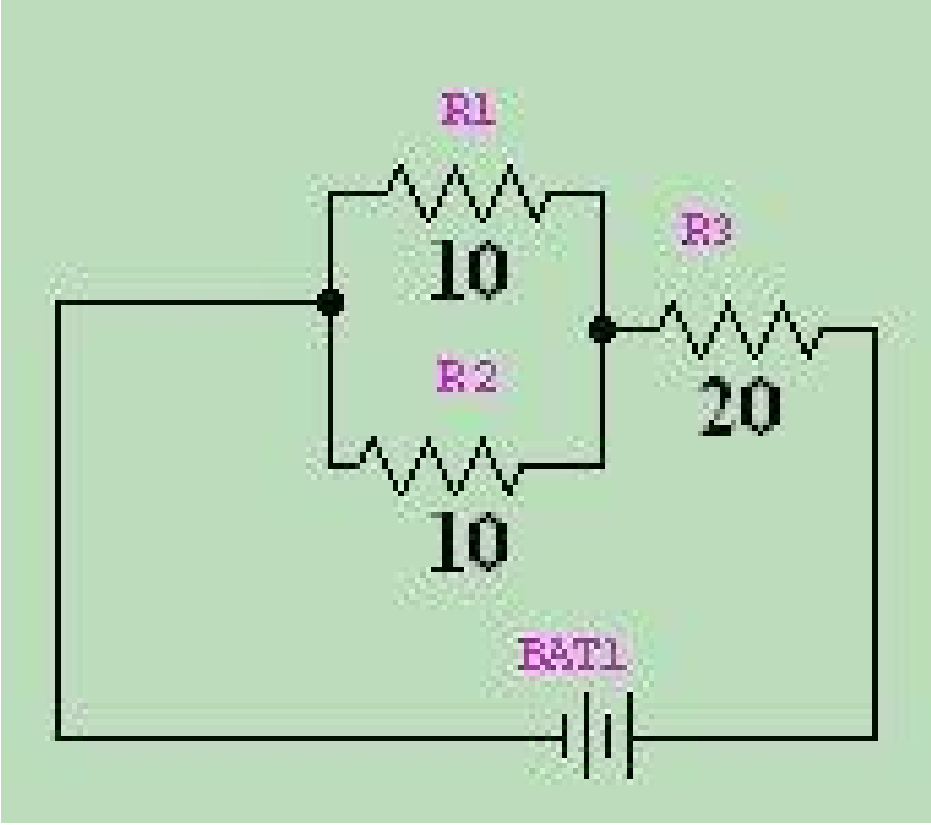
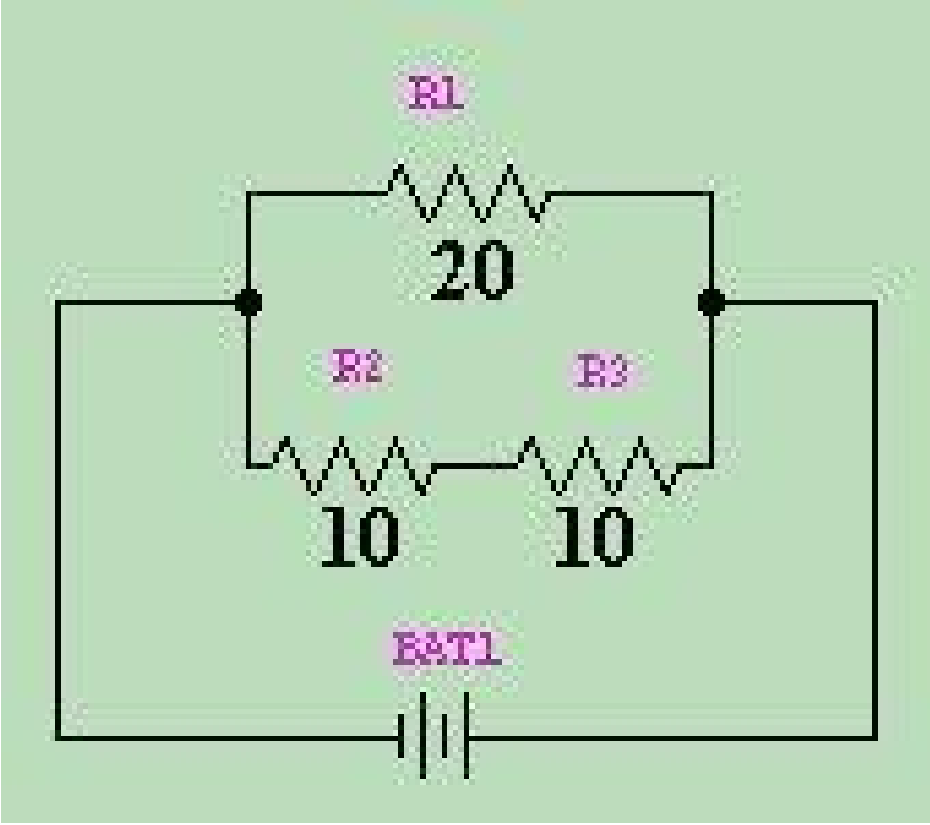
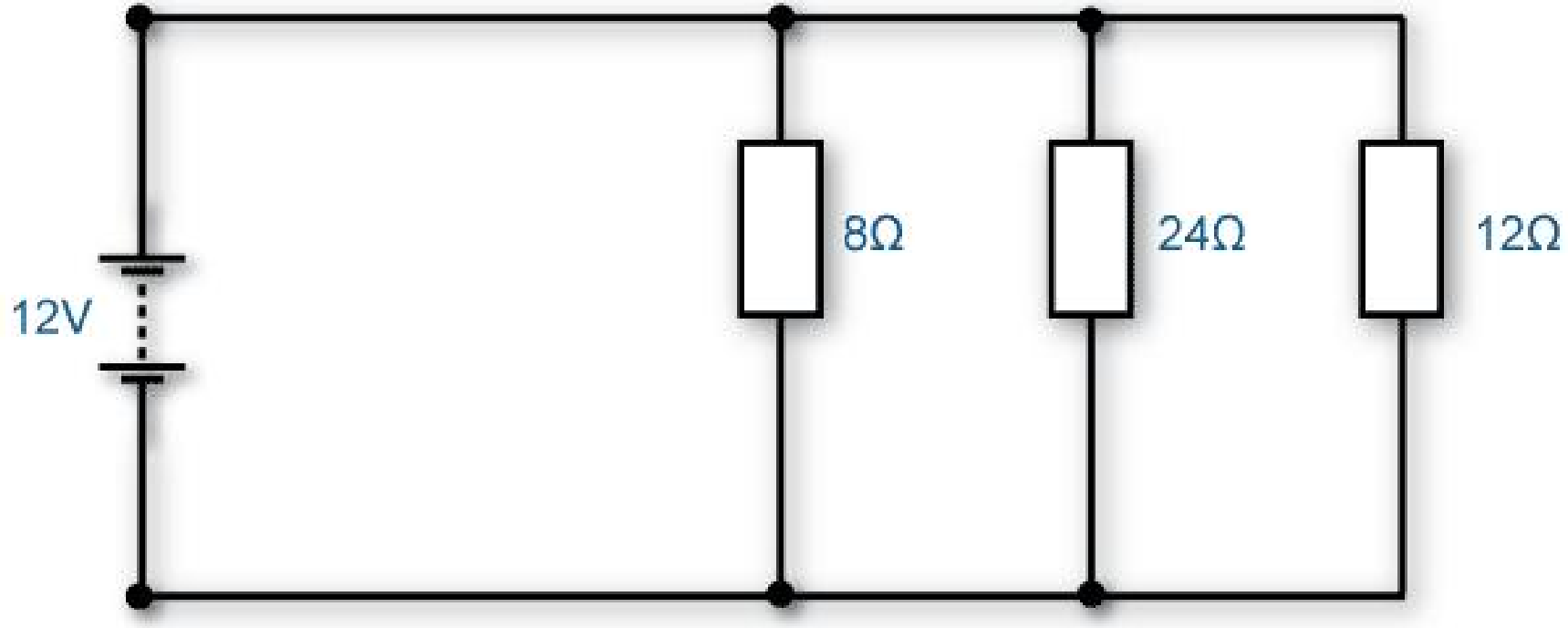


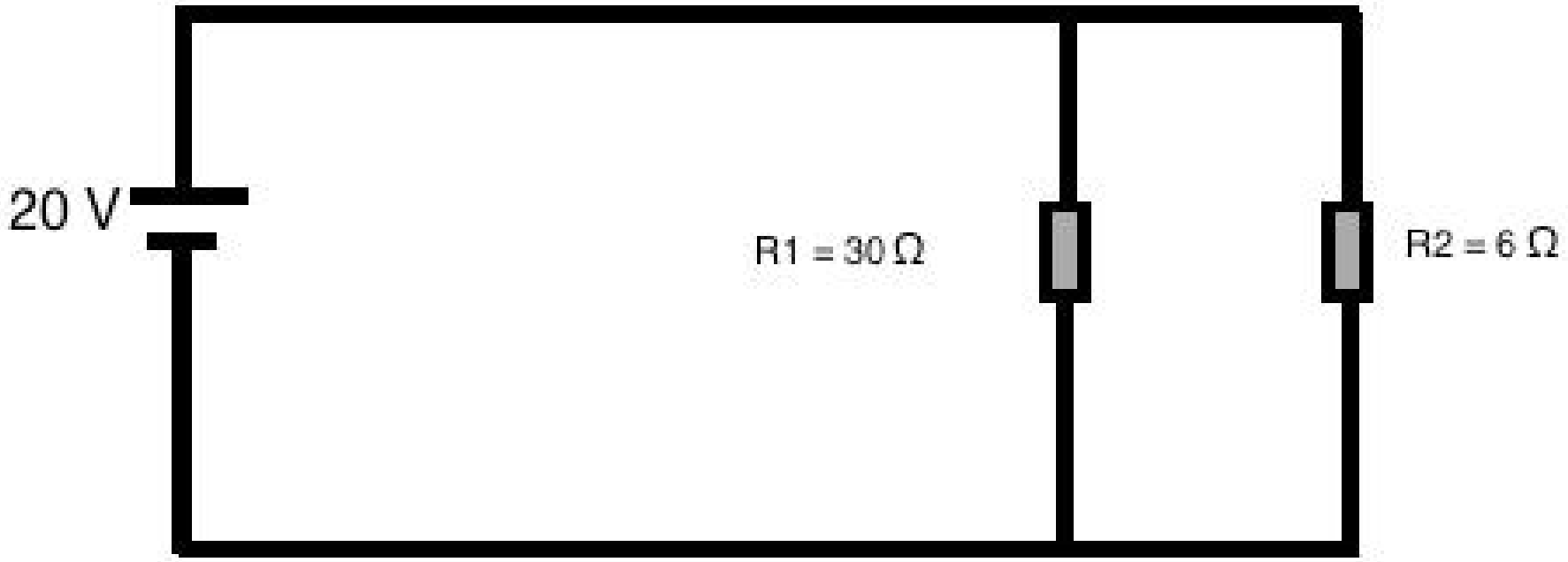
43.



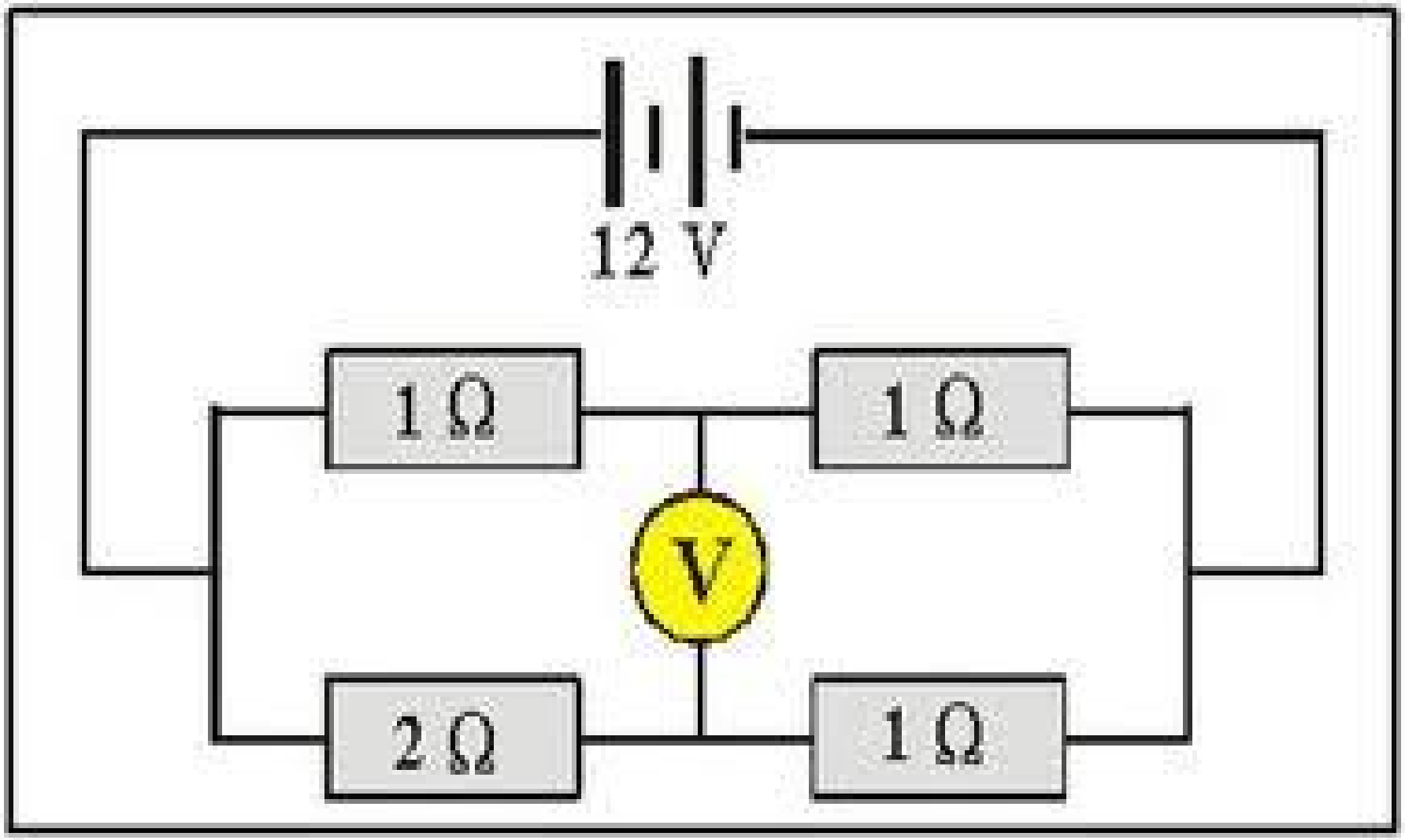
44. Határozd meg az eredő ellenállást, az áramerősséget a főágban és a mellékágakban.



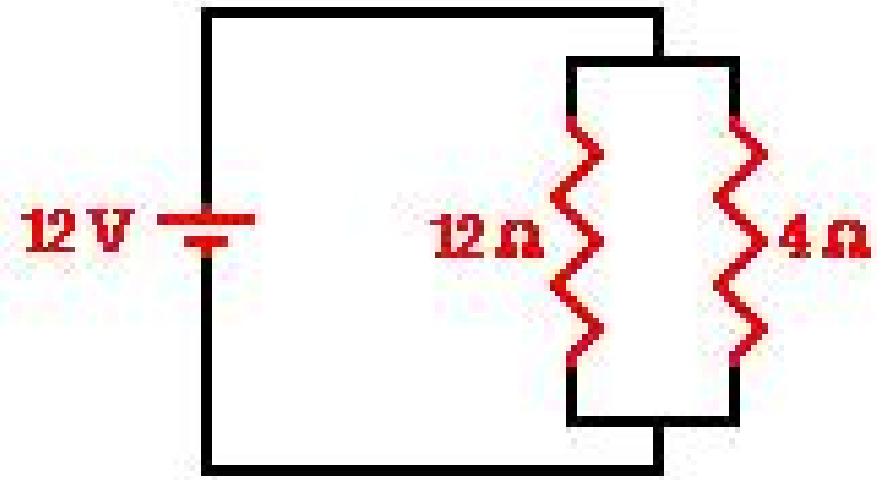
45.



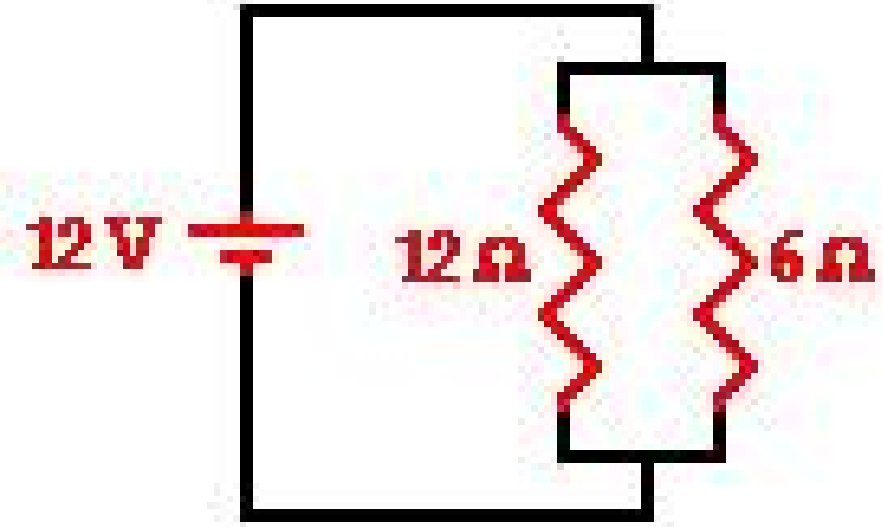
46.



47.



48.



Megoldások (vegyes)

31.Re=3,4 kΩ, 32.Re=2,2Ω, 33.Re=2,4Ω

34.Re=2,4Ω, 35.Re1=6Ω,Re2=2Ω, Re=3Ω

36.Re1=8Ω, Re2=9Ω, Re=4,23Ω

37.Re1=1,875Ω, Re2=2Ω, Re=3,875 Ω

38.Re1=5,45kΩ, Re=15,45kΩ

39.Re1=1,74Ω, Re=4,74Ω

40.Re1=300Ω, Re=120Ω

41.Re1=1Ω, Re=8Ω, 42.Re1=5Ω, Re=25 Ω

43.Re1=20Ω, Re=10Ω

Megoldások (Ohm törvénye)

44.Re=4Ω, I=3A, I1=1,5A, I2=0,5A, I3=1A

45.Re=5Ω, I=4A, I1=0,66A,I2=3,33A

46.Re=1,2Ω, I=10A, I1=6A, I2=4A

47.Re=3Ω, I=4A, I1=1A, I2=3A

48.Re=4Ω, I=3A, I1=1A, I2=2A