Electrical Engineering (Circuits)

Power

1. A current 10,000 μA can be felt by humans. How many milliamps (mA) is this?

   (A) 10.0
   (B) 1.0
   (C) 100.0
   (D) 0.1

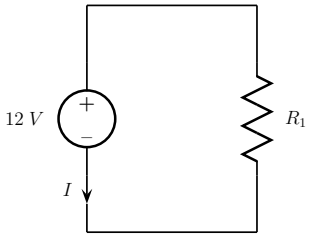
2. A voltage of 10 MV is equal to:

   (A) 10,000 GV
   (B) 0.01 GV
   (C) 0.001 GV
   (D) 1,000 GV

3. 10^{-2} seconds is equal to:

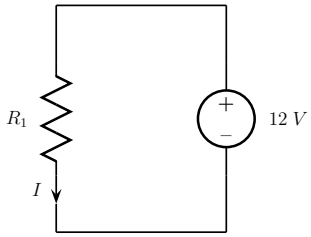
   (A) 10 ms
   (B) 10^2 ms
   (C) 1 ms
   (D) 0.1 ms

4. What is I if $R_1 = 40$ kΩ?



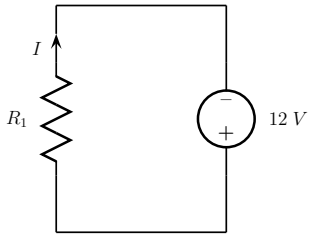
   (A) -0.3 mA
   (B) 4.8 mA
   (C) -4.8 mA
   (D) 0.3 mA

5. What is I if $R_1 = 40$ kΩ?



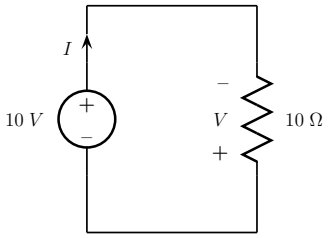
   (A) 0.3 mA
   (B) -0.3 mA
   (C) -4.8 mA
   (D) 4.8 mA

6. What is I if $R_1 = 40$ kΩ?



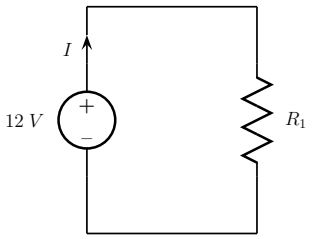
(A) -0.3 mA
(B) -4.8 mA
(C) 4.8 mA
(D) 0.3 mA

7. What are I and V?



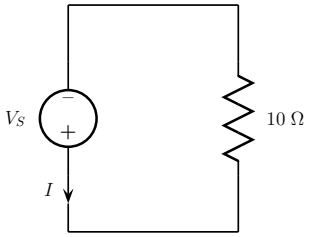
(A) -1A, -10V
(B) 1A, 10V
(C) 1A, -10V
(D) -1A, 10V

8. What is the power absorbed by R_1 if $R_1 = 10$ kΩ?



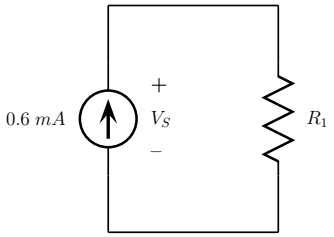
(A) -14.4 mW
(B) -12.2 mW
(C) 14.4 mW
(D) 12.2 mW

9. What is V_S if $I = 2A$?



(A) -20 V
(B) 5 V
(C) -5 V
(D) 20 V

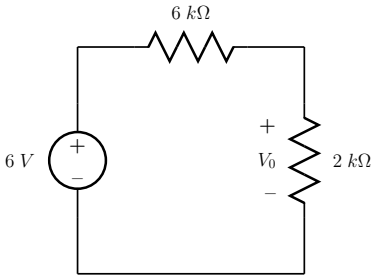
10. What is V_S if $R_1 = 10$ kΩ?



(A) 6 V
(B) -0.6 V
(C) -6 V
(D) 0.6 V

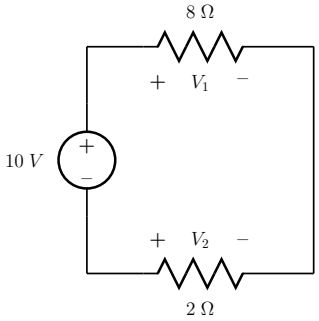
11. **T** or **F**: According to the *passive sign convention*, a positive power is associated with a component that is absorbing energy.

12. What is V_0?



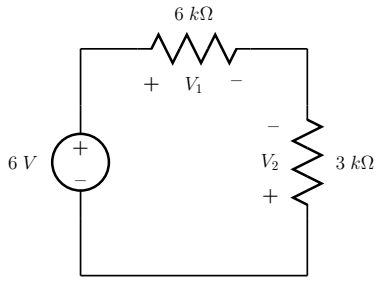
(A) $\frac{3}{2}$ V
(B) $\frac{3}{4}$ V
(C) 2.5 V
(D) 4.5 V

13. What are V_1 and V_2?



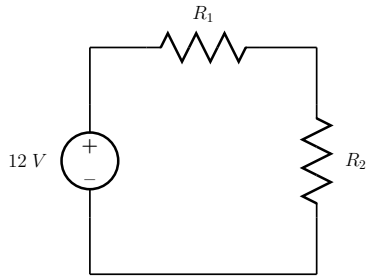
(A) 8V, -2V
(B) 8V, 2V
(C) -8V, 2V
(D) -8V, -2V

14. What are V_1 and V_2?



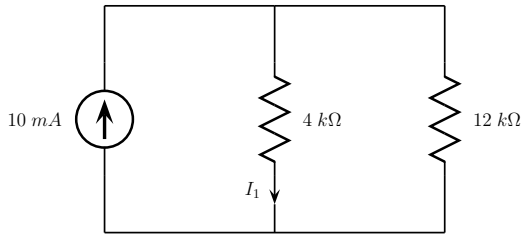
(A) 6V, 2V
(B) 4V, -2V
(C) 4V, 2V
(D) -6V, 2V

15. If the power supplied by the voltage source is 60 W, how much power is dissipated by R_1 if $R_2 = 1\ \Omega$?



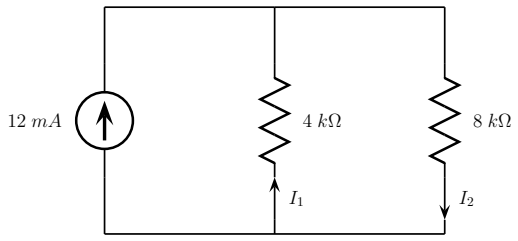
(A) 35 W
(B) 45 W
(C) 55 W
(D) 25 W

16. What is I_1?



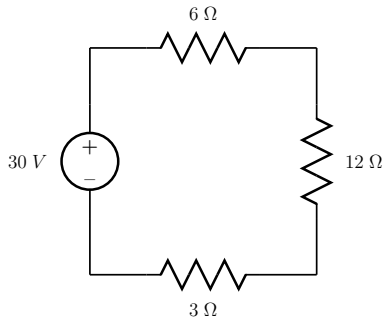
(A) 7.5 mA
(B) 5 mA
(C) 10 mA
(D) 2.5 mA

17. What are I_1 and I_2?



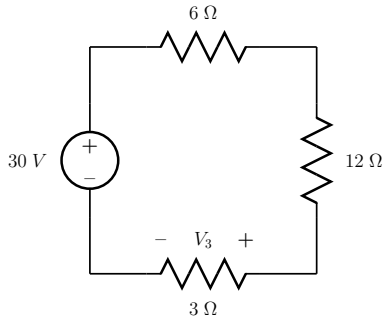
(A) -4 mA, 8 mA
(B) -8 mA, 4 mA
(C) 4 mA, 8 mA
(D) -8 mA, 4 mA

18. What is R_{EQ} for the three resistors?



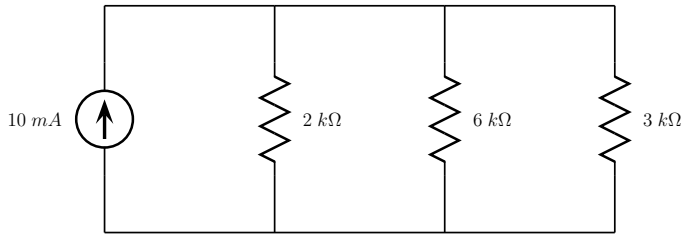
(A) 19 Ω
(B) 21 Ω
(C) 9 Ω
(D) 18 Ω

19. What is V_3?



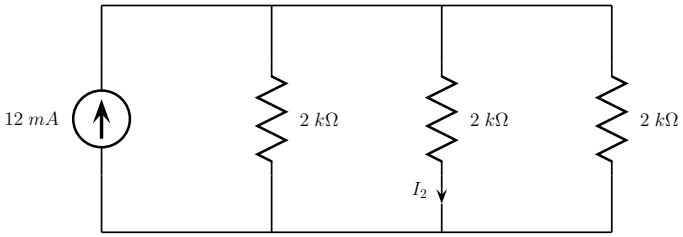
(A) $-\frac{30}{7}$ V
(B) $\frac{30}{7}$ V
(C) $\frac{10}{7}$ V
(D) $-\frac{10}{7}$ V

20. What is R_{EQ} for the three resistors below?



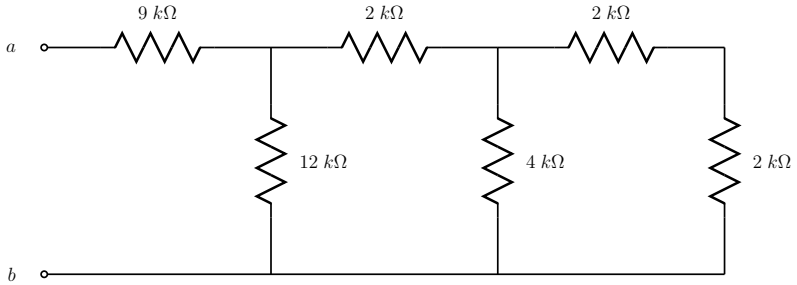
(A) $\frac{36}{11}$ kΩ
(B) 11 kΩ
(C) 1 kΩ
(D) $\frac{11}{36}$ kΩ

21. What is I_2?



(A) 2 mA
(C) 6 mA
(B) 8 mA
(D) 4 mA

22. What is R_{ab}?



(A) 6 kΩ
(C) 9 kΩ
(B) 15 kΩ
(D) 12 kΩ

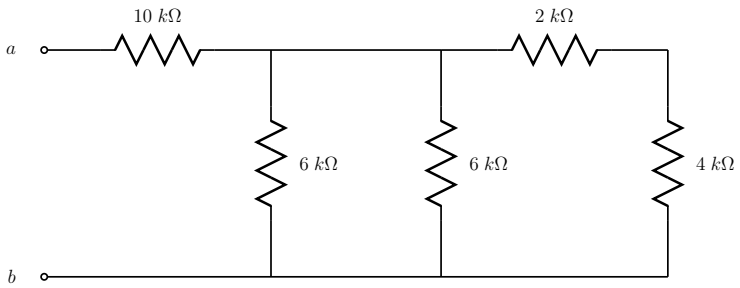
23. What resistor value would need to be added, in series, to two parallel 10 Ω resistors to make an overall resistance of 15 Ω?

(A) 25 Ω
(C) 7.5 Ω
(B) 10 Ω
(D) 5 Ω

24. **T** or **F**: Three resistors in series will have a larger overall resistance than any of the individual resistors.

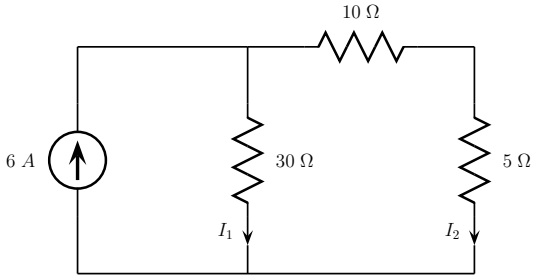
25. **T** or **F**: Three resistors in parallel will have a larger overall resistance than any of the individual resistors.

26. Find R_{ab}.



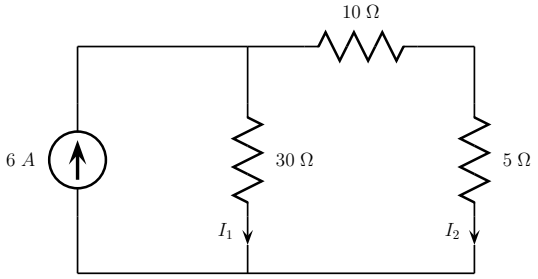
(A) 15 kΩ
(C) 12 kΩ
(B) 9 kΩ
(D) 6 kΩ

27. What is I_1?



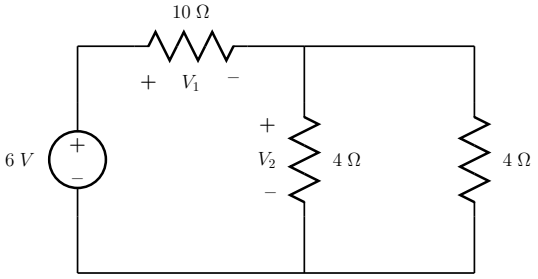
(A) 4 A
(B) 8 A
(C) 6 A
(D) 2 A

28. What is I_2?



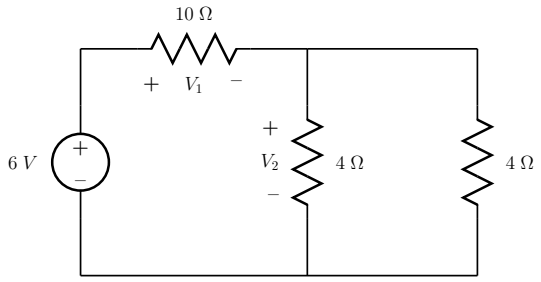
(A) 2 A
(B) 8 A
(C) 6 A
(D) 4 A

29. What is V_1?



(A) 1 V
(B) 2 V
(C) 5 V
(D) 4 V

30. What is V_2?



(A) 2 V

(B) 4 V

(C) 1 V

(D) 5 V