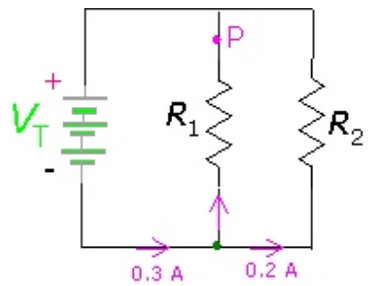
Physics 3204

Unit 2: Section 2 -Current Electricity

Worksheet 7: Parallel Circuit

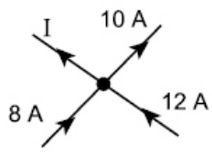
1. What is the current at point P?

(A) unknown because R_1 and V_T are unknown
(B) 0.1A
(C) 0.5A
(D) 0.0.3A



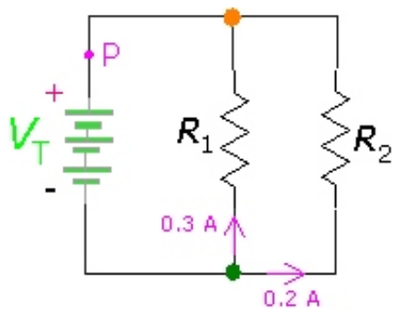
2. What is the value of I in the circuit junction below?

(A) 6 A
(B) 10 A
(C) 14 A
(D) 30 A



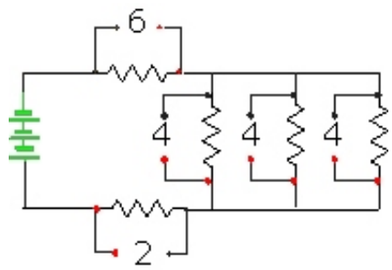
3. Which statement correctly describes the current at point P?

(A) 0.1A away from the battery
(B) 0.1A towards the battery
(C) 0.5A away from the battery
(D) 0.5A towards the battery



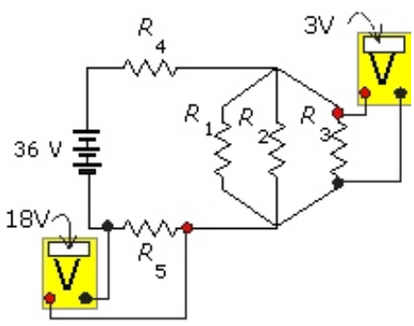
4. The numbers in the circuit to the right indicate the voltage drops across the various resistors. What is the voltage of the battery?

(A) 12V
(B) 9.3V
(C) 8V
(D) 20V



5. According to the readings on the two voltmeters, what must be the voltage drop across R_4?

(A) 9V
(B) 17V
(C) 15V
(D) 18V

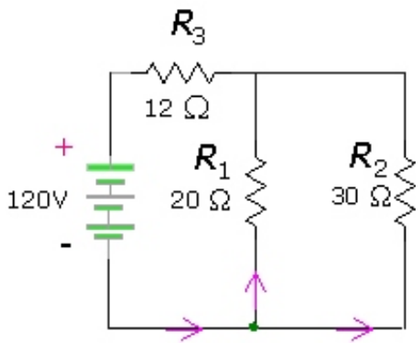


6. Which is always true for resistors in parallel and resistors in series?

	Resistor in Parallel	Resistor in Series
(A)	equal currents	equal currents
(B)	equal currents	equal voltage drops
(C)	equal voltage drops	equal currents
(D)	equal voltage drops	equal voltage drops

7. Use Kirchoff's rules to find the current through and the voltage across R_3.

(A) $I_3 = 10A$ $V_3 = 120V$
(B) $I_3 = 3A$ $V_3 = 36V$
(C) $I_3 = 5A$ $V_3 = 60V$
(D) $I_3 = 2A$ $V_3 = 24V$

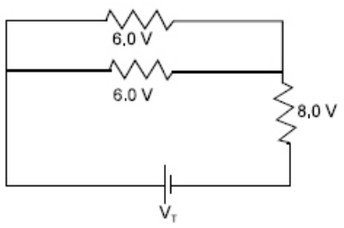


8. What is the equivalent resistance of four 16 Ω resistors connected in parallel?

(A) 0.25
(B) 4.0
(C) 16
(D) 64

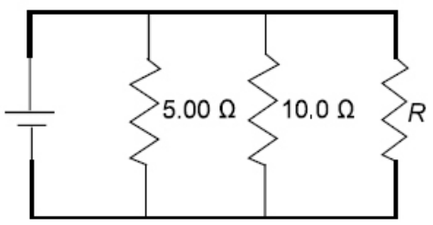
9. What is the voltage, V_T, across the source in the circuit below?

(A) 2.2 V
(B) 11.0 V
(C) 14.0 V
(D) 20.0 V



10. What resistor, R, must be added to the circuit below to give a total resistance of 2.00 Ω

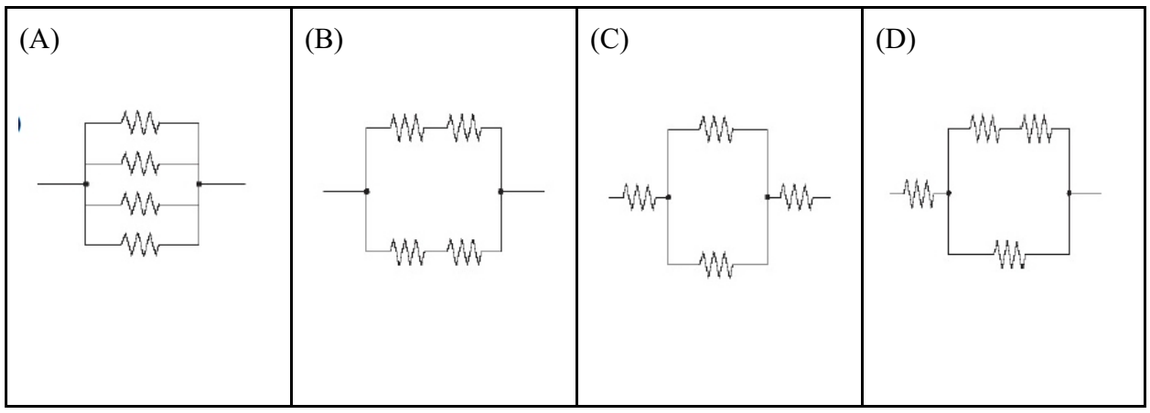
(A) 0.200 Ω
(B) 0.800 Ω
(C) 1.25 Ω
(D) 5.00 Ω



11. If two 75 Ω resistors are connected in parallel with an 18 V battery, how much current passes through one of the resistors?

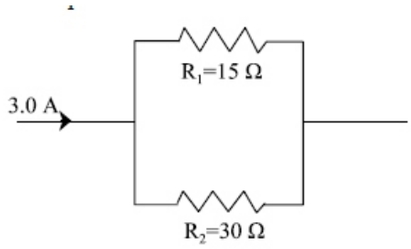
(A) 0.12 A
(B) 0.24 A
(C) 0.48 A
(D) 4.2 A

12. Which arrangement of four identical resistors has the least total resistance?



13. The diagram below shows part of an electric circuit. What is the current through resistor R_1?

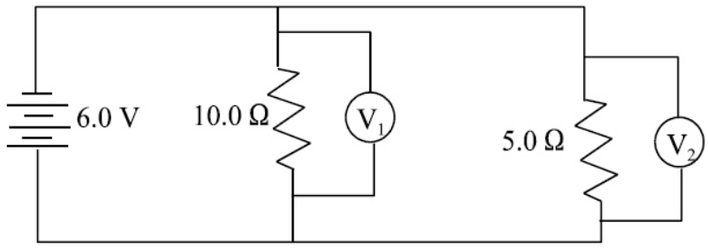
(A) 1.0 A
(B) 1.4 A
(C) 2.0 A
(D) 3.0 A



14. If four 20 Ω resistors are connected in parallel, what is the equivalent resistance?

(A) 5 Ω
(B) 10 Ω
(C) 20 Ω
(D) 80 Ω

15. What are the readings of V_1 and V_2 in the circuit below?



	V_1 (Volts)	**V_2 (Volts)**
(A)	2	4
(B)	4	2
(C)	3	3
(D)	6	6

16. Which scientist proposed that around any closed path the sum of the voltage rises is equal to the sum of the voltage drops?

(A) Coulomb
(B) Kirchoff
(C) Ohm
(D) Volta

17. If four 20 Ω resistors are connected in parallel, what is the equivalent resistance?

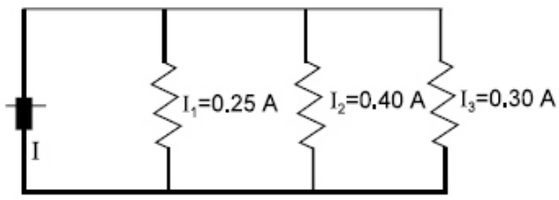
(A) 5 Ω
(B) 10 Ω
(C) 20 Ω
(D) 80 Ω

18. What is the total resistance when a 12 Ω and 15 Ω resistor are connected in parallel?

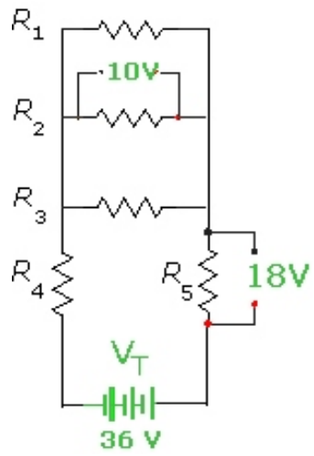
(A) 0.037 Ω
(B) 0.15 Ω
(C) 6.7 Ω
(D) 27 Ω

19. What current, I, is coming from the source in the circuit below?

(A) 0.10 A
(B) 0.95 A
(C) 1.1 A
(D) 9.8 A



20. In the circuit to the right the voltage of the source is 36V. The voltage drops across R_2 and R_5 are 10V and 18V, respectively. What are the voltage drops across the other resistors?



21. Two resistors of 6Ω and 12Ω are connected in parallel and then the parallel combination is connected in series with a 6Ω and a 12Ω resistor, plus a 33 V power supply. Use Kirchoff's rules to find the current through and the voltage across each resistor. [3]