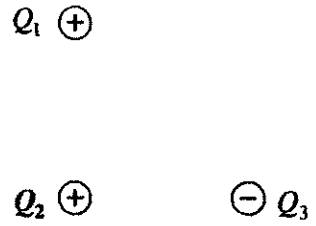
PRACTICE TEST

Name:

D 1. Three charges of identical magnitude are arranged as shown.



What is the direction of the electric force on Q_2?

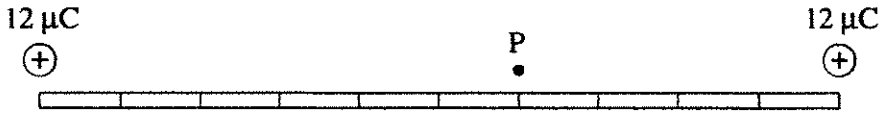
A. 

B. 

C. 

D. 

C 2. Identical 12 μC charges are placed at the ends of a metre stick.

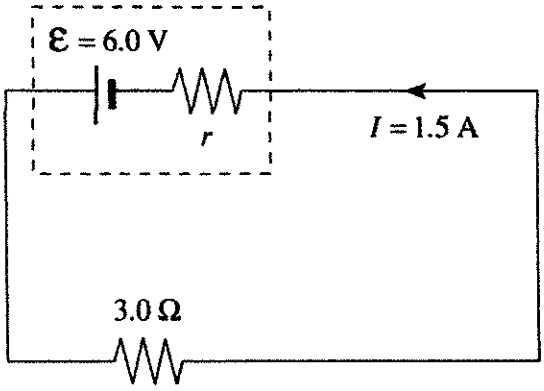


What is the electric potential at point P at the 60 cm mark on the metre stick?

A. 9.0×10^4 V
B. 3.8×10^5 V
C. 4.5×10^5 V
D. 9.8×10^5 V

A

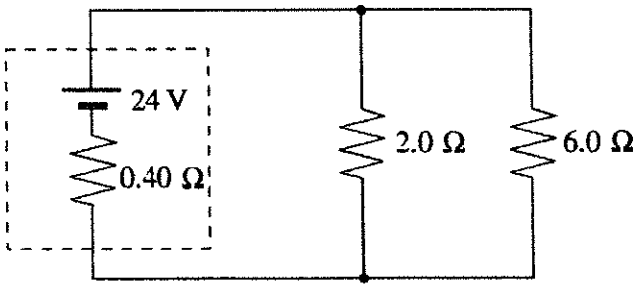
3. What is the internal resistance of the battery if it delivers 1.5 A when connected to a 3.0 Ω external load?



A. 1.0 Ω
B. 3.0 Ω
C. 4.0 Ω
D. 7.0 Ω

A

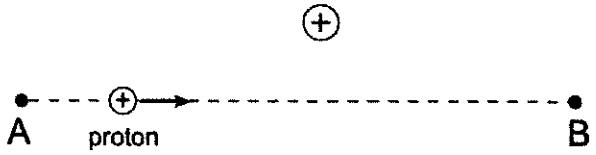
4. In the circuit below, what is the current through the 2.0 Ω resistor?



A. 9.5 A
B. 10 A
C. 12 A
D. 13 A

C

5. A proton is made to travel in a straight line near a fixed positively charged object as shown in the diagram below. What is happening to the proton's electric potential energy as it travels from A to B?



A. It is increasing.
B. It is decreasing.
C. It is increasing then decreasing.
D. It is decreasing then increasing.

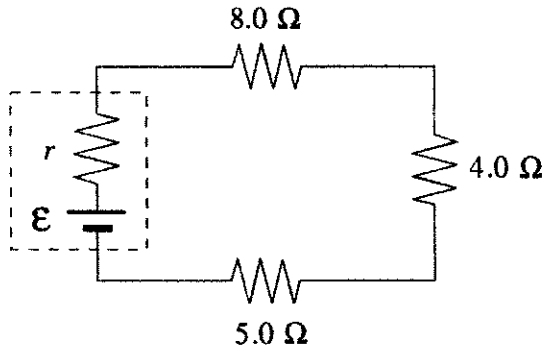
B

6. The terminal voltage of a battery is always less than the emf of a battery when supplying current in a circuit because of a voltage drop due to

A. the terminal connections.
B. the battery's internal resistance.
C. heating of resistors in the circuit.
D. heating of the wires in the circuit.

A

7. When a resistor is added in parallel with the 4.0 Ω resistor in the circuit shown below, what happens to the voltage across the 5.0 Ω resistor and to the terminal voltage of the battery?

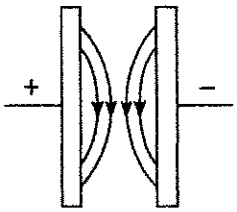


	VOLTAGE ACROSS 5.0 Ω	TERMINAL VOLTAGE
A.	increases	decreases
B.	increases	increases
C.	decreases	decreases
D.	decreases	increases

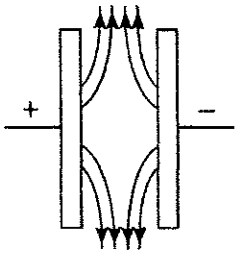
D

8. Which diagram best illustrates the electric field between oppositely charged parallel plates?

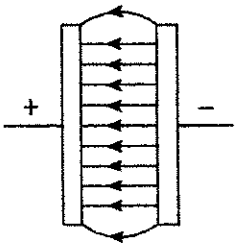
A.



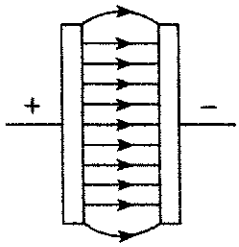
B.



C.

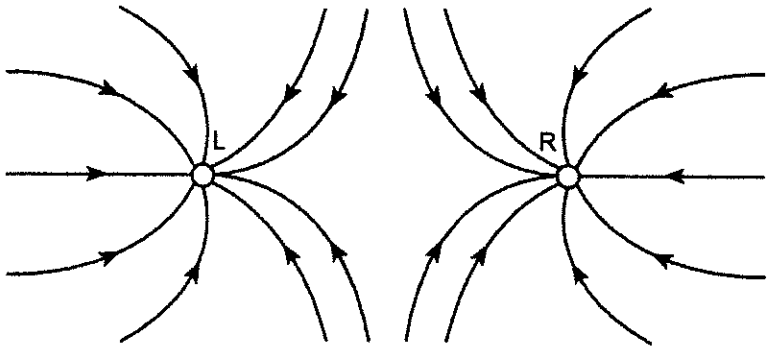


D.



A

9. The diagram shows the electric field lines near two point charges, L and R. Identify the polarity of these point charges.



	POLARITY OF L	POLARITY OF R
A.	Negative	Negative
B.	Negative	Positive
C.	Positive	Negative
D.	Positive	Positive

A

10. An electron orbits a nucleus which carries a charge of $+9.6\times10^{-19}$ C. If the electron's orbital radius is 2.0×10^{-10} m, what is its electric potential energy?

A. -6.9×10^{-18} J
B. -3.5×10^{-8} J
C. 43 J
D. 2.2×10^{11} J

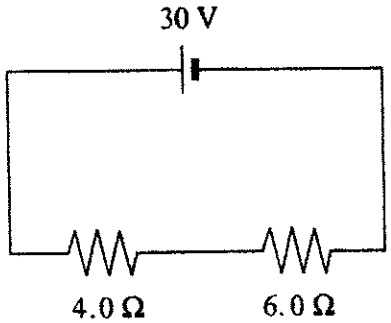
C

11. Which household electrical appliance consumes the least energy in a typical month?

A. Stove
B. Dryer
C. Clock
D. Refrigerator

B

12. What is the power output of the $6.0\ \Omega$ resistor in the diagram?



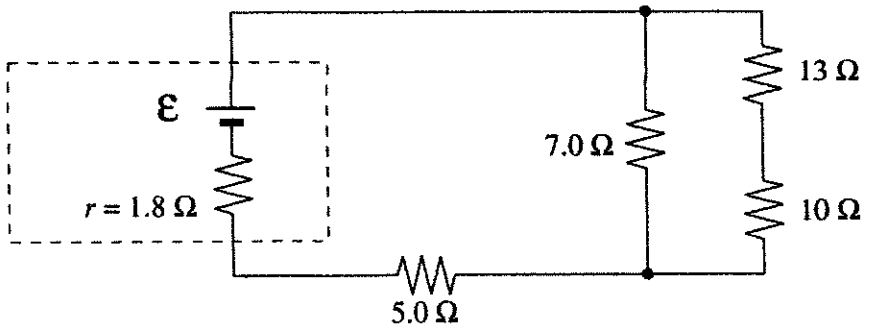
A. 36 W
B. 54 W
C. 90 W
D. 150 W

B

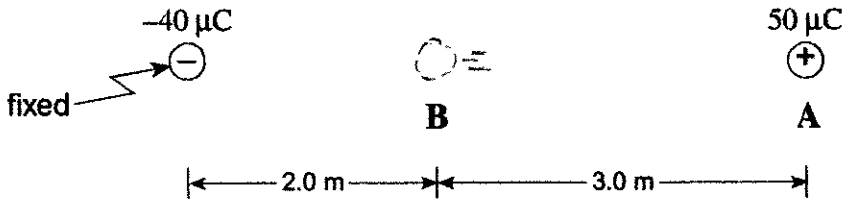
13. A 12 V power supply is connected to an $8.0\ \Omega$ resistor for 50 s. How much charge passes through the resistor?

A. 1.9 C
B. 75 C
C. 900 C
D. 4 800 C

(0.55 A) 14. The internal resistance of the battery shown in the circuit below dissipates 10 W of power. Determine the current through the 13 Ω resistor. **(7 marks)**



15. A 1.0×10^{-3} kg styrofoam ball carrying 50 μC of charge is released from rest from position **A** as shown in the diagram below. ($1\ \mu C = 1\times10^{-6}$ C)



(−5.4 J)

a) Determine the change in electric potential energy, ΔE_p, of the ball as it moves from position **A** to position **B**. **(5 marks)**

$(1.0\times10^{2}\ \frac{m}{s})$

b) What is the speed of the ball as it reaches position **B**? ($v_i = 0$ at **A**) **(2 marks)**