Name: _____ Practice Ph12 4-1

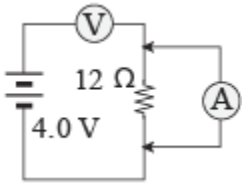
1. One ampere is ....
   A. a unit of power
   B. 1 $V\Omega$
   C. 1 C/s
   D. 1 J/s

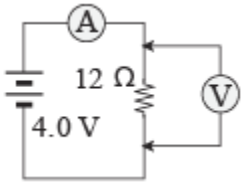
2. Voltage is to the amount of pressure in a garden hose as
   A. Current is to the size of the opening at the ends of the hose
   B. Current is to the diameter of the hose
   C. Current is to the length of the hose
   D. Current is to the amount of water passing through the hose

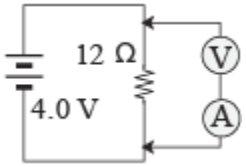
3. Current is a measure of
   A. the resistance to the flow of charged particles in a circuit.
   B. the number of charges stored in a cell.
   C. the amount of energy given to a charged object.
   D. the charge passing a point in a circuit in a given time.

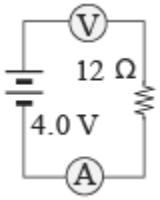
4. What is the name of a device for measuring the voltage of a cell or battery without passing a current through it?
   A. voltmeter
   B. potentiometer
   C. ammeter
   D. ohmmeter

5. Which of the following represents the correct placement of a voltmeter (V) and an ammeter (A) in a circuit?

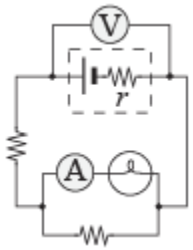
A. 

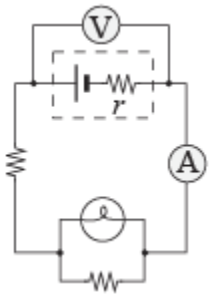
B. 

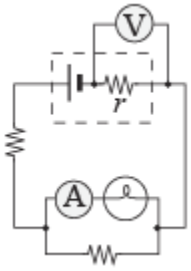
C. 

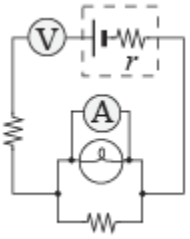
D. 

6. In which of the following circuits is the voltmeter placed correctly to measure the terminal voltage of the battery, and the ammeter placed correctly to measure the current through the light bulb (⊖)?

A. 

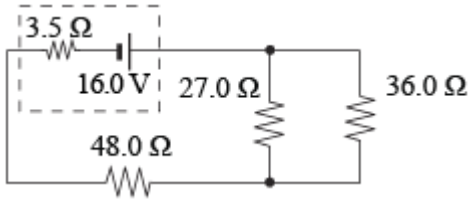
B. 

C. 

D. 

A 12 V battery transfers 33 C of charge to an external circuit in 7.5 s.

7. What is the power output (in Watts) of the battery?

8. 

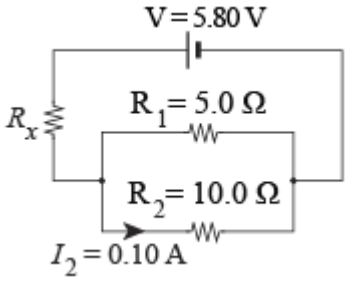
The above diagram shows a circuit. The emf of the battery is 16.0 V and its internal resistance is 3.5 ohms. What is the power dissipated in the 48.0 ohm resistor?

9. What is the resistance of a light bulb rated 150 W at 220 V?
   A. 320 ohms
   B. 0.0031 ohms
   C. 0.68 ohms
   D. 1.5 ohms

10. Which resistor in the circuit shown will dissipate the greatest power?

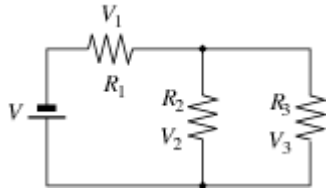
A. 330 Ω
B. 270 Ω
C. 200 Ω
D. all of them will dissipate the same power

11. What is the power dissipated in the unknown resistor R_x in the circuit below?



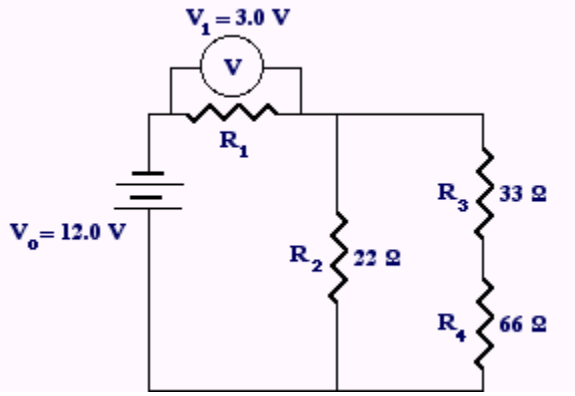
A. 2.0 W
B. 0.30 W
C. 1.4 W
D. 1.7 W

12. Which of the following statements is true for the electric circuit shown below, regardless of the resistors used?



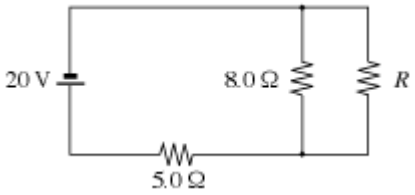
A. $V = V_2 + V_3$
B. $V_1 = V_2$
C. $V = V_1 + V_2 + V_3$
D. $V = V_1 + V_3$

13. Find the current through R_4 in the circuit shown below.

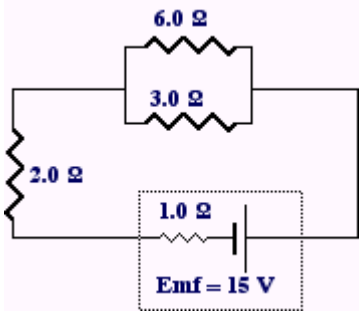


A. 0.12 A
B. 0.091 A
C. 0.18 A
D. 0.14 A

14. The 8.0 ohm resistor in the circuit shown below dissipates 45 J of heat energy in 5.0 s. Determine the value of the resistor R in ohms.

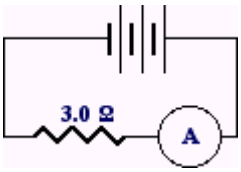


15. What is the terminal voltage of a battery with an internal resistance of 1.0 ohm and an emf of 15 V, when the battery is connected as shown below?



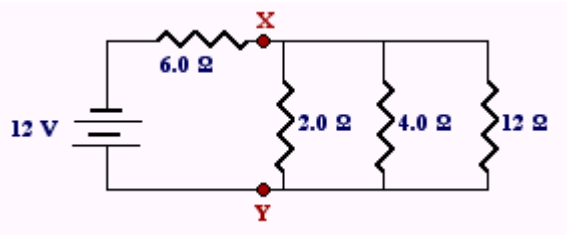
A. 11 V
B. 3.0 V
C. 14 V
D. 12 V

16. In the circuit shown below, what is the EMF of the storage battery if the battery has an internal resistance of 0.50 ohm and the reading on the ammeter is 1.2 A? Assume the ammeter has zero resistance.



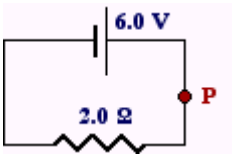
A. 4.2 V
B. 0.60 V
C. 3.0 V
D. 3.6 V

17. In the circuit illustrated below, which of the following changes would cause the greatest increase in the current through the 6 ohm resistor?



A. removing the 12 ohm resistor
B. removing the 2 ohm resistor
C. connecting another 12 ohm resistor between points X and Y
D. connecting another 2 ohm resistor between points X and Y

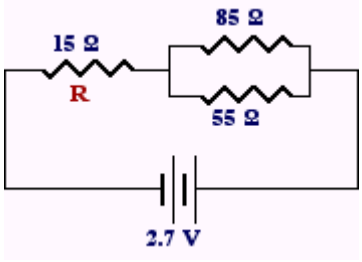
18. An electrical curcuit consists of 6.0 V dc power source and a 2.0 ohm resistor as shown in the diagram below.



How much charge passes point P in 40 seconds?

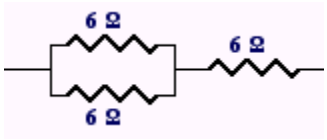
A. 720 C
B. 3.0 C
C. 18 C
D. 120 C

19. What is the current through resistor **R** in the circuit shown below?



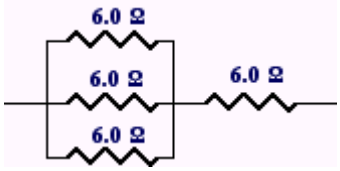
A. 0.26 A
B. 0.017 A
C. 0.056 A
D. 0.18 A

20. What is the equivalent resistance of the following circuit segment?



A. 12 ohm
B. 2 ohm
C. 3 ohm
D. 9 ohm

21. What is the equivalent resistance of the following circuit segment?

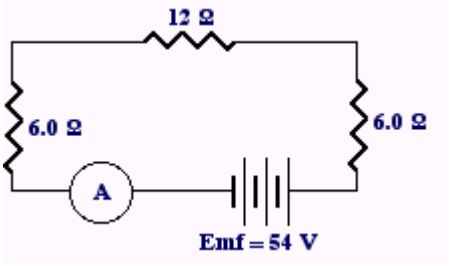


A. 6 ohm
B. 12 ohm
C. 18 ohm
D. 8 ohm

22. Calculate the equivalent resistance for the following circuit segment.

A. 30 ohm
B. 2.0 ohm
C. 8.0 ohm
D. 13 ohm

23. Calculate the equivalent resistance for the following circuit segment.



A. 2.4 ohm
B. 8.0 ohm
C. 2.25 ohm
D. 24 ohm

24. A certain battery has an EMF of 12 V and an internal resistance of 0.30 ohm. If the battery is connected in a circuit where it delivers a current of 1.9 A, what is the potential difference between its terminals?

A. 12.6 V
B. 12 V
C. 11.4 V
D. 0.57 V

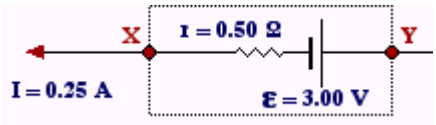
25. A certain dry cell has an EMF of 1.500 V. When it is connected in series with a 1.20 ohm resistance, the current through it is 0.870 A. What is the internal resistance of the dry cell?

A. 1.72 ohm
B. zero
C. 0.38 ohm
D. 0.52 ohm

26. The EMF of a dry cell is 1.5 V. When the current through it is 6.3×10^{-2} A, the potential difference across its terminals is 1.39 V. What is the internal resistance of the dry cell?

A. 22 ohm
B. 1.7 ohm
C. 46 ohm
D. 24 ohm

27. The dotted box in the diagram below indicates a battery with an internal resistance of 0.50 ohm and an emf of 3.00 V. If the current flowing is 0.25 A, what is the terminal voltage V_{xy}?



A. 3.12 V
B. 0.12 V
C. 2.88 V
D. 3.00 V