Physics

Name_____

Date_____Period____#_____

Ingrum 12/97

Topic 21 Review Worksheet

1. For Questions 1-10, write the letter of the correct answer to the left of the question.

_____ 1. As resistors are added to a circuit in series, the current in the circuit.
(a) increases (b) decreases (c) remains the same

_____ 2. As you plug in more appliances in your house, the total current in the circuit
(a) increases (b) decreases (c) remains the same

_____ 3. As you plug in more appliances in your house, the total resistance
(a) increases (b) decreases (c) remains the same

_____ 4. An ammeter connected in parallel with a battery and resistor will
(a) give the current in the circuit (b) read zero (c) measure the resistance of the battery (d) burn out

_____ 5. A voltmeter has an internal resistance that is
(a) high (b) low

_____ 6. An ammeter has an internal resistance that is
(a) high (b) low

_____ 7. Current is the same throughout in a
(a) series circuit (b) parallel circuit

_____ 8. The sum of the resistors is less than the smallest resistor in a
(a) series circuit (b) parallel circuit

_____ 9. If you have three identical resistors in parallel and one is removed, the current through the remaining resistors
(a) increases (b) decreases (c) remains the same

_____ 10. If one resistor in a parallel circuit is removed, the total current
(a) increases (b) decreases (c) remains the same

2. A 10 Ω resistor, a 20 Ω resistor, and a 30 Ω resistor are connected in series with a 120 V source. What is the current in the circuit?

2._____

3. A 10.0 Ω resistor, a 20.0 Ω resistor, and a 30.0 Ω resistor are connected in parallel across a potential difference of 120 V. What is the current through the 20.0 ohm resistor?

3._____

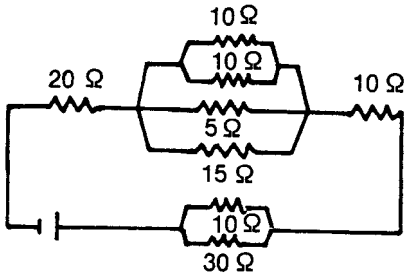
4. A 15.0 Ω resistor is connected in series with two 10.0 Ω resistors in parallel and a 120 V generator. What is the voltage drop across the 15.0 ohm resistor?

4._____

5. The following appliances are all connected in parallel in one of the lines in the electrical system of a house: a 15 Ω electric fry pan, a 25 Ω refrigerator, a 20.0 Ω heater, and a 12 Ω toaster. The fuse in this line melts at 28 A. Will this arrangement of appliances cause the fuse to melt? Explain.

5._____

6. Find the effective resistance of the circuit in the diagram.



6._____

7. A 6 Ω resistor,a 54 Ω resistor, and a 32 Ω resistor are connected in series. Calculate their total resistance.

7._____

8. Calculate the total resistance of four 8 Ω resistors connected in parallel.

8._____

9. Two 12 Ω resistors and a 6 Ω resistor are each connected in parallel. A 15 Ω resistor is added to the parallel group in series. Calculate the voltage needed to drive a 2.0 A current through the total resistance.

9._____

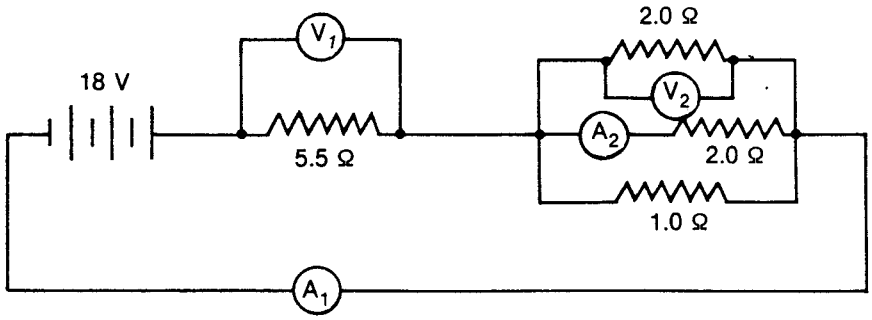
10. Three resistors are connected in parallel across 20.0 V. The resistors draw a total of 5.0 A. Two of the resistors have values of 24 Ω and 12 Ω. What is the value of the third resistor?

10._____

11. A coffee pot rated at 360 W, an iron rated at 960 W, and an oven rated at 1200 W are connected in parallel across 120 V. The 15 A fuse in the circuit immediately blows. Calculate the total current drawn.

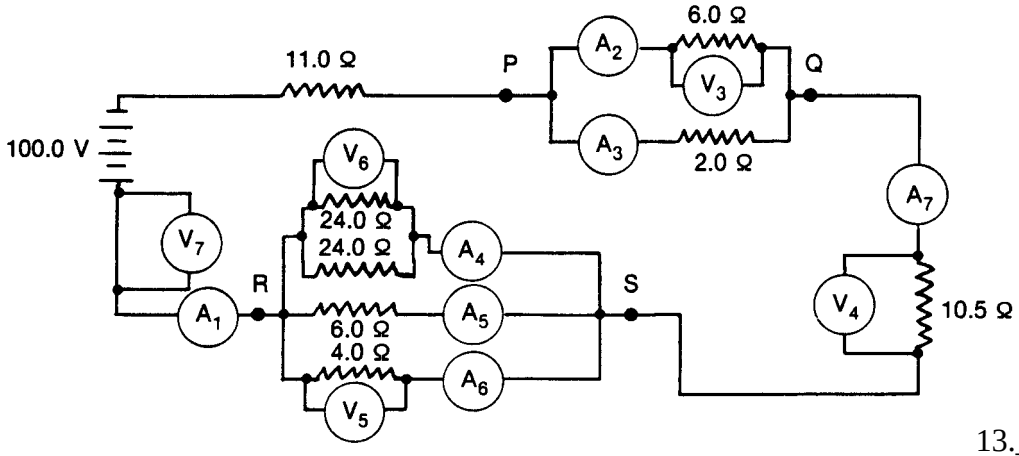
11._____

12. Calculate the total resistance of the circuit shown below.



12._____

13. What are the meter readings for the diagram in problem 12?



13._____

14. Calculate the reading for each of the 7 ammeters in the circuit diagram below.

14._____

15. Calculate the reading for each of the 5 voltmeters in the circuit diagram in problem 14.

15._____