

Name: _____

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Chapter 13.2 Homework

Conceptual Physics

Parent Signature: _____

Each numbered question is worth one point unless otherwise noted.

Reviewing Concepts

7. What is a parallel circuit?

8. Draw the circuit diagram for a circuit containing two bulbs in parallel.

9. What does Kirchhoff's current law say about the current entering any branch in a circuit?

10. Each branch in a parallel circuit has the same _____.

11. List two advantages of parallel circuits over series circuits.

12. Does the wiring in your home connect the appliances in series or parallel? How could you prove this?

13. What happens to the total resistance of a parallel circuit as more branches are added? Why?

14. How do you calculate the total resistance of two resistances that are wired in parallel?

15. What is a short circuit?

16. Why can short circuits be dangerous?

Solving Problems

8. Find the amount and direction of the current through point P in each of the circuits as shown on #8 on page 335.

A.

B.

C.

9. Find the following for each of the three circuits shown at the top of page 335:

- a. The voltage across each resistor
- b. The current through each resistor
- c. The total current in the circuit
- d. The total resistance of the circuit

A. (1 pt.)

B. (1 pt.)

C. (1 pt.)

10. A parallel circuit contains a 6-V battery and two 6- Ω bulbs.

a. Draw the circuit diagram for this circuit.

b. Calculate the current through each branch.

c. Calculate the total current.

d. Use Ohm's law to calculate the total resistance of the circuit.

e. Use the formula for combining parallel resistors to calculate the total resistance of the circuit.

11. A parallel circuit contains a 24-V battery, a 4- Ω bulb and a 12- Ω bulb.

a. Draw the circuit diagram for this circuit.

b. Calculate the current through each branch.

c. Calculate the total current in the circuit.

d. Use Ohm's law to calculate the total resistance of the circuit.

e. Use the formula for combining parallel resistors to calculate the total resistance of the circuit.

12. Find the unknown quantities in each of the circuits shown at the bottom of page 335.

Figure A

$I =$

$V =$

Figure B

$R_1 =$

$R_2 =$

Figure C

$I =$

$R =$