Name _____

Hour _____

Physics - Chapters 34-35 Task List

Task	In Class? (Yes/No)	Date Due	Grade
• Lab 33.1 - Wet Cell Battery	Yes		*/15
* *Vodcast #1 – Electric Circuits & Ohm's Law*			/21
Worksheet – Concept Review #1-12, Ch 34 Problems #1-4			/8
Quiz 34.1 Electric Circuit & Ohm's Law	Yes		*/15
* *Vodcast #2 – Electric Power*			/27
Worksheet – Concept Review #13-21, Ch 34 Problems #5-8			/8
• Lab 34.1 - Watts Your Power?	Yes – when ready		*/15
Quiz 34.2 Electric Power	Yes		
* *Vodcast #3 – Series Circuits*			/18
Worksheet – Ch 35 Problems #1			/3
* *Vodcast #4 – Parallel Circuits*			/21
Worksheet – Ch 35 Problems #2-3, Concept Review #22-28			/8
Quiz 35.1 Series & Parallel Circuits	Yes		*/15
• Lab 34.2 - Ohm's Law and Circuits	Yes on Computer		*/15
• Lab 35.1 - Electric Circuits	Yes - when ready		*/15
• Lab 35.2 – Brighter Bulbs	Yes on Computer		*/15
Review Chapters 34-35	Yes		No Grade
Test Chapters 34-35	**Yes**		*/200
Packet Total	**MUST Turn in before taking the Ch 34-35 Exam**		**/114**

CH. 34-35 OBJECTIVES

Vodcast #1 – Electric Circuits

1. What causes the flow of electric charge?

2. Define electric current. What are the units? What equation is used to calculate it?

3. Define resistance. What are the units? What kind of wires have a high resistance?

4. Why do two light bulbs burn dimmer than one light bulb when hooked up to the same battery?

5. State Ohm's law.

6. Draw the symbols for a wire, battery, and resistor.

7. Example #1. Find the current in a circuit with 6V and 2Ω.

Vodcast #2 – Electric Power

8. How are light bulbs classified?

9. What is the equation for Electrical Power? What are the units?

10. Example #1. How much current does it take to light up a 60W light bulb?

11. How is electrical energy measured?

12. Example #2. How much would it cost to run 5 light bulbs of 100W for 8 hours if electricity costs $0.08 per kW/hr?

13. Example #3. How much would it cost to run 5 light bulbs of 20W for 8 hours if electricity costs $0.08 per kW/hr?

14. What causes you to get an electric shock?

15. What is DC? What power source provides DC?

16. What is AC? What power source provides AC? How often does AC change directions?

Vodcast #3 – Series Circuits

1. What makes a circuit a series circuit?

2. How is the voltage distributed in a series circuit?

3. How is the current distributed in a series circuit?

4. How is the total resistance in a series circuit measured?

5. 3 light bulbs are connected in a series circuit; one light bulb is removed, what will happen to the brightness of the other two bulbs?

6. Example #1. A 6V battery is hooked in series with two $2\,\Omega$ resistors. What is the total resistance of the series circuit? What is the current going through the circuit? How much power is the circuit using?

Vodcast #4 – Parallel Circuits

7. What makes a circuit a parallel circuit?

8. How is the voltage distributed in a parallel circuit?

9. How is the current distributed in a parallel circuit?

10. How is the total resistance in a parallel circuit measured?

11. 3 light bulbs are connected in a parallel circuit; one light bulb is removed, what will happen to the brightness of the other two bulbs?

12. Example #1. A 6V battery is hooked in **series** with two 3 Ω resistors. What is the total resistance of the parallel circuit? What is the current going through each bulb in the circuit? What is the power for each bulb?

13. Example #2. A 6V battery is hooked in **parallel** with two 3 Ω resistors. What is the total resistance of the parallel circuit? What is the current going through each bulb in the circuit? What is the power for each bulb?

14. Explain the cause and prevention of overloading household circuits.

Concept Review: Circuits Ch. 34-35

Chapter 34: Electric Current

1. What condition is necessary for the flow of heat? What analogous condition is necessary for the flow of electric charge?

2. What is meant by the term *potential*? What is meant by *potential difference*?

3. What condition is necessary for the sustained flow of water in a pipe? What analogous condition is necessary for the sustained flow of electric charge in a wire?

4. What is electric current?

5. What is an ampere (amp)? (hint: not something you hook a guitar to)

6. What is voltage?

7. Does charge flow through a circuit or into a circuit?

8. Does voltage flow through a circuit, or is voltage established across a circuit?

9. Is electric resistance greater in a short fat wire or a long thin wire?

10. What is Ohm's law?

11. If the voltage impressed across a circuit is constant but the resistance doubles, what change occurs in the current?

12. If the resistance of a circuit remains constant while the voltage across the circuit decreases to half its former value, what change occurs in the current?

13. Why is it that a bird can perch without harm on a high voltage wire?

14. What is the function of the third prong in a household electric plug?

15. What is power?

16. Which of these is a unit of power and which is a unit of electrical energy: a watt, a kilowatt, and a kilowatt-hour?

17. How many amperes flow through a 60-watt bulb when 120 volts are impressed across it?

18. Distinguish between DC and AC. Which is produced by a battery and which is usually produced by a generator?

19. From where do the electrons originate that flow in a typical electric circuit?

20. The wattage marked on a lightbulb is not an inherent property of the bulb but depends on the amount of voltage to which it is connected, usually 110 V or 120 V. Calculate the current through a 40-W bulb connected to 120 V.

21. The resistance of a certain wire is 10 ohms. What would the resistance of the same wire be if it were twice as long? If it were twice as thick?

Chapter 35: Electric Circuits

22. If three lamps are connected in series to a 6 volt battery, how many volts are impressed across each lamp?

23. If one of the three lamps blows out when connected in series, what happens to the current in the other two?

24. If three lamps are connected in parallel to a 6-volt battery, how many volts are impressed across each lamp?

25. If one of the three lamps blows out when connected in a parallel, what happens to the current in the other two?

26. a**.** In which three cases will there be more current in each of three lamps— if they are connected to the same battery in series or parallel?

    b. In which case will there be more voltage across each lamp?

27. a. What happens to the total circuit resistance when more devices are added to a series circuit?

    b. To a parallel circuit?

28. Why does the total circuit resistance decrease when more devices are added to a parallel circuit?

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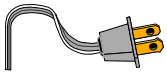
Physics

Chapter 34 Problems



1. Household current in a circuit cannot generally exceed 15.0 A for safety reasons.

   a) Calculate the maximum amount of charge that could flow through a household circuit in 1 minute.

   b) Calculate the maximum number of electrons that could move through a portion of a household circuit in 1 minute.

2. The lighter in Bryce's car has a resistance of 4.0 Ω and runs off of the car's 12.0 V battery.

   a) Calculate the current drawn by the lighter.

   b) Draw a schematic of the lighter circuit. Include labels for the battery, resistance, and current.

3. Lydia's hair dryer has a resistance of 9.00 Ω when it is first switched on.

   a) Calculate the current used by the hair dryer when it is plugged in to the 120.0 V line in Lydia's house.

   b) How does the resistance of the hair dryer change as the hair dryer heats up?

   c) How does the current used by the hair dryer change as the hair dryer heats up?

4. When Dinah's oven is heated to its maximum temperature, it has a resistance of 27.5 Ω. At this temperature, 480 C of charge moves through the circuit every minute.

a) Calculate the potential difference required to power the oven.

b) Can the oven circuit be wired in the same way as a normal household circuit? Explain your answer. *(HINT: Note the potential difference value used for the household circuit in Question #3.)*

5. In her Physics lab, Jenny attaches a lamp with a resistance of 8.0 Ω to a 9.0 V battery. She uses an ammeter to measure the current through the lamp.

a) Calculate the expected reading on Jenny's ammeter.

b) Draw and label a schematic for Jenny's circuit. Include the battery, lamp, and ammeter in your diagram.

c) Calculate the power used by the lamp in Jenny's circuit.

6. A 120.0 V outlet in Carol's college dorm room is wired with a circuit breaker on a 5.0 A line so that students cannot overload the circuit. Carol's iron is rated at 700.0 W. Will Carol trip the circuit breaker when she turns on her iron? Calculate the current to determine your answer.

7. A 40.0 Watt light bulb in Mrs. Millard's living room lamp is connected to a 120.0 V outlet.

a) Calculate the resistance of the light bulb.

b) Would the light bulb still produce 40 Watts if it were connected to a 60 V source instead? Calculate the power to justify your answer.

8. Each night, Sally leaves her 100 W porch light on from 8 p.m. to 6 a.m. Sally's power company charges her 9.0 ¢ per kWh. How much does it cost Sally to run the porch light each night for a week?

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Physics

Chapter 35 Homework

1. Beverly is testing two Christmas tree light bulbs. Each bulb has a resistance of 6.0 Ω. Beverly tests the bulbs in a series circuit using a 6.0 V power source.

a) Calculate the equivalent resistance for the two light bulbs in series.

b) Calculate the total current through the circuit.

c) What is the current through . . . light bulb #1? . . . light bulb #2? How do you know?

d) What is the potential difference across . . . light bulb #1? . . . light bulb #2? How do you know?

e) Calculate the power that would be used by each light bulb if it were placed individually in a simple circuit with the 6.0 V battery.

f) Calculate the power used by each light bulb when it is in the series circuit. How does this power compare to the power that would be used by the light bulb individually in a simple circuit?

g) Draw a schematic for the series circuit. Include labels for the total potential difference, total current, and the resistance for each individual light bulb.

2. Beverly changes her test to include the same two light bulbs in a parallel circuit, again using a 6.0 V power source.

a) Calculate the equivalent resistance for the two light bulbs in parallel.

b) Calculate the total current through the circuit.

c) What is the current through . . . light bulb #1? . . . light bulb #2? How do you know?

d) What is the potential difference across . . . light bulb #1? . . . light bulb #2? How do you know?

e) Calculate the power used by each light bulb when it is in the parallel circuit. How does this power compare to the power that would be used by the light bulb individually in a simple circuit? *(HINT: Use your answers for Question #1e to compare.)*

f) Draw a schematic for the parallel circuit. Include labels for the total potential difference and the current and resistance for each individual light bulb.

3. An oven hood contains a 150 Ω lamp and a 50.0 Ω fan, wired in parallel to a 120 V power source.

a) Calculate the equivalent resistance for the lamp and the fan together.

b) Calculate the total current through the circuit.

c) Do you think the current through the lamp is more, less, or equal to 1.6 A? Explain your answer.

d) Do you think the current through the fan is more, less, or equal to 1.6 A? Explain your answer.