

**Unit 5H**  
**Parallel and Complex Circuits**  
**Note-Taking Guide TEACHER**

**Main Ideas, Key Points, Questions:**

*After watching the video segment, write down key points, main ideas, and big questions.*

**Objective(s):**

- *Compare and contrast parallel circuits with series circuits in terms of the current through and voltage across each resistor.*
- *Understand how current and voltage change with the orientation of the resistors in a complex circuit.*

**Notes:**

*During the video segment, use words, phrases, or drawings to take notes.*

**Summary:**

*After watching the video segment, write at least three sentences explaining what you learned. You may ask yourself: "If I was going to explain this to someone else, what would I say?"*

**Answer the following.**

1. How does a parallel circuit compare to a series circuit in terms of the paths through which current can flow?

*A parallel circuit contains multiple paths through which current  
can flow, while a series circuit contains only one path.*

2. What is the same in each branch of a parallel circuit?

*Each branch of a parallel circuit receives the same amount of voltage.*

3. How do you determine the total current flowing through a parallel circuit if you know the individual currents in each branch?

*The total current in a parallel circuit is the sum of the currents flowing through each branch of the circuit.*

4. If one branch of a parallel circuit has more resistance than the other branches, how does the amount of current flowing through that branch compare to the other branches?

*Because each branch receives the same amount of voltage, a branch with more resistance has less current.*

5. If identical light bulbs are wired in parallel, how do they compare to one another in terms of brightness? How is this brightness affected if more bulbs are added to the circuit?

*Each identical bulb in a parallel circuit has the same brightness,*

*which does not change as more bulbs are added in parallel to the circuit.*

6. Write the equation for finding the equivalent resistance of multiple resistors in parallel:

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots + \frac{1}{R_n}$$

7. How does the total resistance in a parallel circuit compare to the combined values of the individual resistors?

*The total resistance of a parallel circuit is less than the  
combined values of the individual resistors in the circuit.*

8. Why are houses wired in parallel instead of in series?

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*Houses are wired in parallel so that all outlets receive the same*

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*amount of voltage and can operate independently of one another.*

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*In a parallel circuit, not all outlets must be turned on for the other outlets to work.*

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9. When circuits have some components that are wired in series and some that are wired in parallel, they are called       *complex*       circuits.

10. What is the same about resistors that are wired in series to one another in a circuit?

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*Each resistor in series will have the same current flowing through it.*

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11. What is the same about branches that are wired parallel to one another in a circuit?

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*Each parallel branch in a circuit will receive the same voltage.*

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