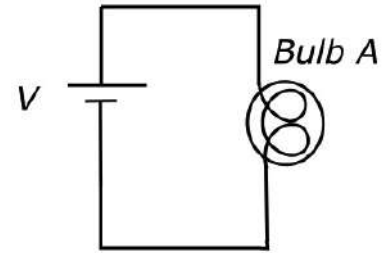NAME _____   DATE _____
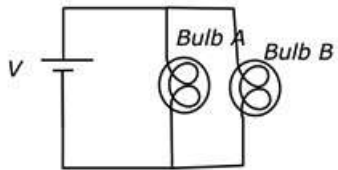
Scenario

A simple circuit is constructed with a single battery, wires, and a single bulb with resistance R.

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Quantitative Analysis

PART A: When a second identical bulb (Bulb B) is placed in the circuit as shown below, describe what happens to the total resistance of the circuit. Provide evidence.

_____

_____

_____

PART B: Write an expression for the total resistance of the circuit in terms of R, the resistance of a light bulb.

PART C: A third identical bulb (Bulb C) is now added to the circuit. Fill in the following table to show what changes and what stays the same in each circuit after Bulb C is added in parallel. Place a check mark or an X in the correct box: increases, decreases, or remains the same.
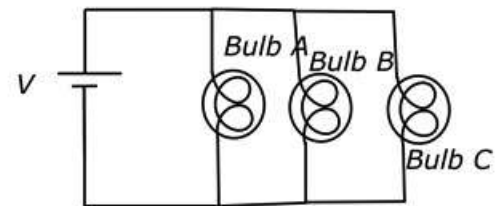
	Increases	*Decreases*	*Remains the Same*
Total ΔV			
ΔV (across Bulb A)			
ΔV (across Bulb B)			
Total Current			
Current through Bulb A			
Current through Bulb B			
Total Resistance			

Analyze Data

PART D: The three bulbs are then taken out of the circuit and rearranged so that, with the switch closed, Bulb A is brighter than Bulbs B and C, and Bulbs B and C are equally bright.

With the switch open, Bulb A is off, and Bulbs B and C stay about the same brightness as when the switch was closed.

Sketch the circuit below.