

Name: \_\_\_\_\_

## A Review of Circuits Lab Activity SPH4C

Materials: Three 6 V bulbs (in holders), Four 1.5 V batteries (in holders), Connecting wires  
Ammeter, Voltmeter, Switch (optional)

### Part 1: Sources in Series

1. Connect one 6V bulb in its holder to one 1.5 V battery in its holder.
2. Use an ammeter to measure the current through the circuit and a voltmeter to measure the voltage across the bulb. Record your data in the table below.
3. Calculate the power consumed by the bulb. Observe the brightness of the bulb and record it in the table as well.
4. Add a second 1.5 V battery in series with the first battery (the positive terminal of one battery should connect to the negative terminal of the other). Repeat your observations and calculation.
5. Repeat for a third and then a fourth 1.5 V battery

Sources	Voltage (V)	Current (A)	Power (W)	Observations of Bulb Brightness
One battery				
Two batteries				
Three batteries				
Four batteries				

What happened to the voltage across the bulb as you added more batteries? \_\_\_\_\_

What happened to the current through the circuit as you added more batteries? \_\_\_\_\_

What happened to the power consumed by the bulb as you added more batteries? \_\_\_\_\_

What happened to the brightness of the bulb as you added more batteries? \_\_\_\_\_

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Try connecting the batteries in parallel: connect the positive terminals of all 4 batteries to one side of the light bulb and the negative terminals of all 4 batteries to the other side.

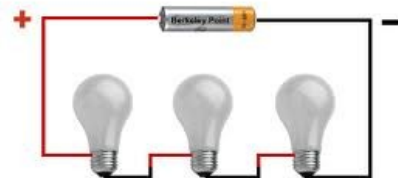
Measure the voltage across the bulb: \_\_\_\_\_

Give your result above, under what circumstances do you think you might use batteries in parallel?

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Part 2: Loads in Series and in Parallel

1. Connect a 6V bulb to 4 1.5-V batteries in series.
2. Use a voltmeter to measure the voltage drop across the bulb and record your data in the table below. Record also the brightness of the bulb.
3. Add a second bulb in series with the first bulb and measure the voltage drop across the first bulb and observe the brightness again. Add a third bulb and repeat.



Circuit	Voltage (V)	Observations of Bulb Brightness
One bulb		
Two bulbs in series		
Three bulbs in series		

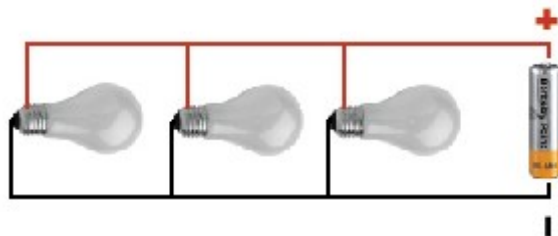
As you added more bulbs in series,

what happened to the voltage across the first bulb? \_\_\_\_\_

what happened to the brightness of the bulbs? \_\_\_\_\_

Most of our houses and office buildings have their loads wired in *parallel*.

4. Repeat the procedure above, this time adding the bulbs in parallel and measuring the voltage across the first bulb.



Circuit	Voltage	Observations of Bulb Brightness
One bulb		
Two bulbs in parallel		
Three bulbs in parallel		

As you added more bulbs in parallel,

what happened to the voltage across the first bulb? \_\_\_\_\_

what happened to the brightness of the bulbs? \_\_\_\_\_

Why do we wire homes in parallel? \_\_\_\_\_