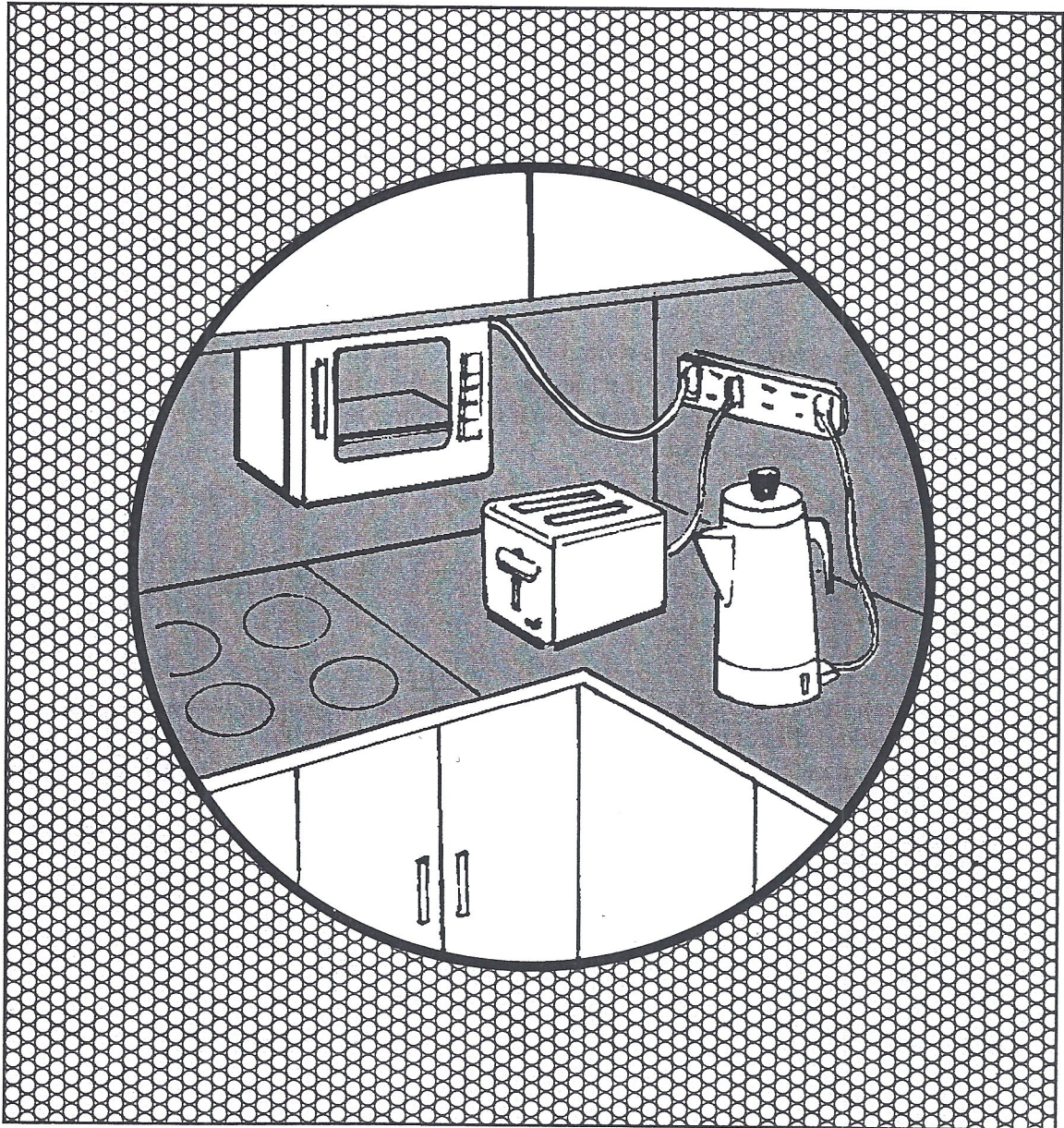


## What is a parallel circuit?

22



**parallel circuit:** an electrical hook-up in which the current has more than one path



# LESSON | What is a parallel circuit?

## 22

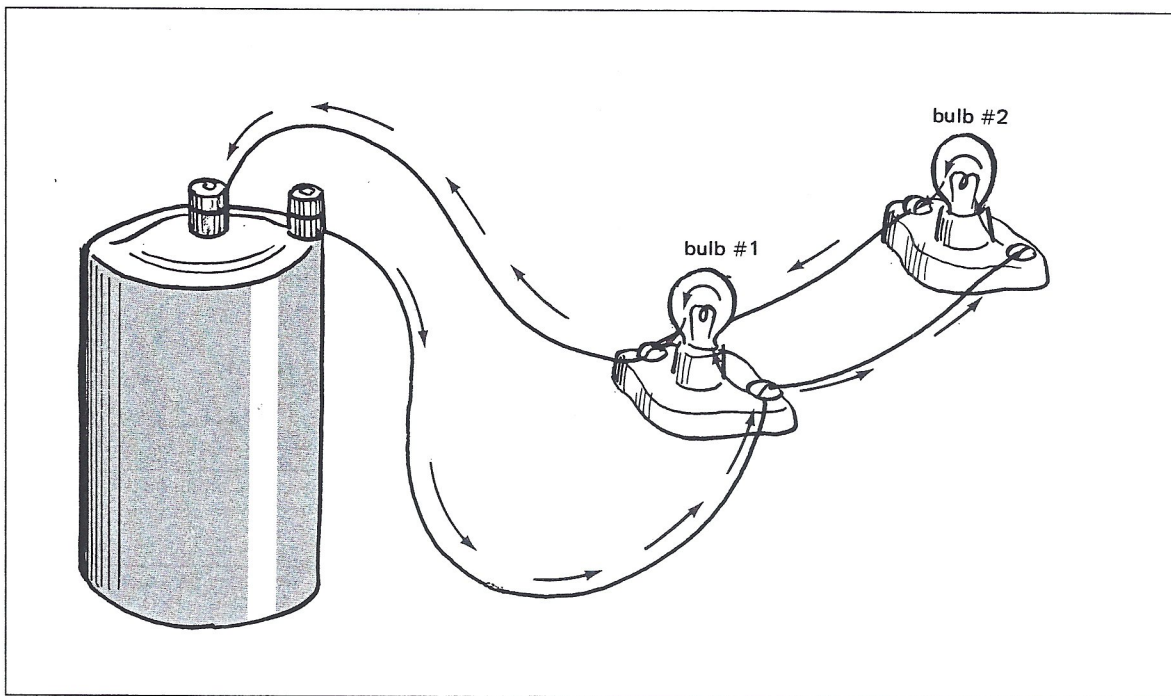
You walk into your home and switch on the TV. You switch on only the TV. You don't have to switch on the toaster and broiler, the hair dryer and all your lights—You don't have to because your home is not wired in series. Your home is wired in parallel.

There are two important facts you should know about **parallel circuits**:

1. In a parallel circuit, the electrons have more than one path to follow. Each appliance has its own path. This lets you use or shut off only one appliance at a time.
2. In a parallel circuit, the appliances do not share the electrical pressure. Each appliance gets the full voltage it needs. Adding more loads does not weaken the force. Each load still works with full power. For example, adding more bulbs to a parallel circuit does not make each bulb give off less light.

Parallel circuits make sense for use in homes, schools, and factories.

## AN EXAMPLE OF PARALLEL CIRCUIT



**Figure A**

Look at Figure A. Then answer the questions.

1. How many bulbs are in this parallel circuit? \_\_\_\_\_
2. How many paths does the electricity have to follow? \_\_\_\_\_ Follow the paths that are shown with your pencil.
3. Is this circuit complete or incomplete? \_\_\_\_\_
4. Do the bulbs light up? \_\_\_\_\_
5. Does the electricity have to pass through bulb #1 for bulb #2 to light up? \_\_\_\_\_
6. If bulb #2 were to blow out, bulb #1 would \_\_\_\_\_.  
 stay lit, go out
7. If bulb #1 were to blow out, bulb #2 would \_\_\_\_\_.  
 stay lit, go out
8. If a third bulb were added, bulbs #1 and #2 would  
 \_\_\_\_\_.  
 give off less light, give off the same amount of light
9. The bulbs in this circuit \_\_\_\_\_ share the electrical pressure.  
 do, do not
10. Your home is wired \_\_\_\_\_.  
 in parallel, in series

## COMPLETING SENTENCES

---

Choose the correct word or term for each statement. Write your choice in the spaces provided.

- Homes, schools and factories, \_\_\_\_\_ wired in series.  
are, are not
- This school is wired in \_\_\_\_\_ .  
parallel, series
- In a series circuit, electricity has \_\_\_\_\_ path to follow.  
one, more than one
- In a parallel circuit, electricity has \_\_\_\_\_ path to follow.  
one, more than one
- In a series circuit, when one bulb goes out, the other bulbs \_\_\_\_\_ .  
stay lit, go off
- In a parallel circuit, when one bulb shuts off, the other bulbs \_\_\_\_\_ .  
stay lit, go off
- An extra bulb is added to a series circuit. The other bulbs now give off \_\_\_\_\_ .  
less light, the same amount of light
- An extra bulb is added to a parallel circuit. The other bulbs now give off \_\_\_\_\_ .  
less light, the same amount of light
- In a parallel circuit, you \_\_\_\_\_ use or shut off one appliance at a time.  
can, cannot
- In a series circuit, you \_\_\_\_\_ use or shut off one appliance at a time.  
can, cannot

## MATCHING

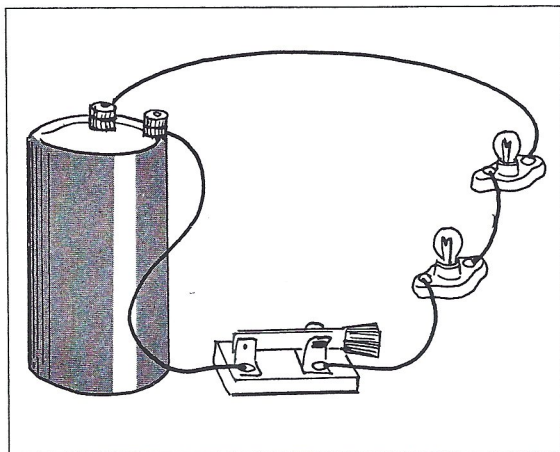
---

Match each term in Column A with its description in Column B. Write the correct letter in the space provided.

Column A	Column B
_____ 1. parallel circuit	a) does not change amount of light each bulb gives
_____ 2. series circuit	b) loads work together
_____ 3. another bulb added to a parallel circuit	c) loads work one at a time
_____ 4. another bulb added to a series circuit	d) does change amount of light each bulb gives

## WORKING WITH CIRCUITS

Look at each circuit. Then answer the questions next to it.



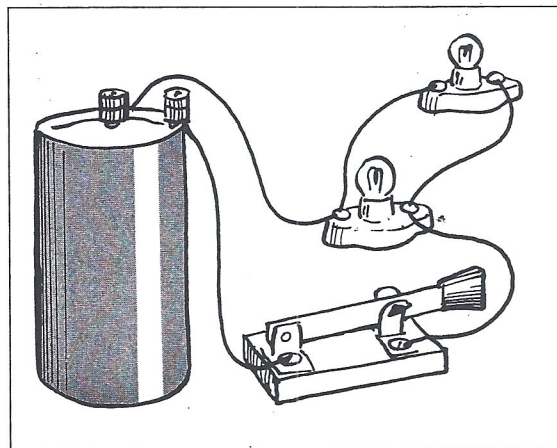
**Figure B**

(Note: Do not count a switch as a load.)

1. What kind of circuit is this?  
\_\_\_\_\_
2. How many paths do the electrons have to follow? \_\_\_\_\_
3. How many loads does this circuit have? \_\_\_\_\_
4. Is the circuit complete or incomplete?  
\_\_\_\_\_
5. Are the loads working? \_\_\_\_\_
6. If one bulb were to blow out, the other bulb would \_\_\_\_\_  
stay lit, shut off
7. Adding another bulb would make the other two give off  
\_\_\_\_\_.  
less light, the same amount of light
8. This \_\_\_\_\_ a good way to wire a home.  
is, is not

Look at Figure C.

9. What kind of circuit is this?  
\_\_\_\_\_
10. How many loads does this circuit have? \_\_\_\_\_
11. How many paths do the electrons have to follow? \_\_\_\_\_
12. Is the circuit complete or incomplete?  
\_\_\_\_\_



**Figure C**



## COMPLETE THE CHART

Each phrase below describes either a parallel circuit or a series circuit. Which one is it? Put a check (✓) in the proper box.

	Parallel Circuit	Series Circuit
1. only one path for the electricity to follow		
2. more than one path for the electricity to follow		
3. loads work or shut off one at a time		
4. all loads are on or all loads are off		
5. appliances share the voltage		
6. appliances do not share the voltage		
7. good way to wire a home		
8. not a good way to wire homes		
9. an extra bulb makes the others less bright		
10. an extra bulb does not change the brightness of the others		

## WORD SCRAMBLE

Below are several scrambled words you have used in this Lesson. Unscramble the words and write your answers in the spaces provided.

1. RESSIE

\_\_\_\_\_

2. LAPELRAL

\_\_\_\_\_

3. TRAGEENOR

\_\_\_\_\_

4. SPALNAPCIE

\_\_\_\_\_

5. GRINIW

\_\_\_\_\_

## REVIEWING ELECTRICAL SYMBOLS

---

Draw the following electrical symbols.

1.	open switch	
2.	closed switch	
3.	one dry cell	
4.	two dry cells	
5.	wire	
6.	motor	
7.	light bulb	

## TRUE OR FALSE

---

In the space provided, write "true" if the sentence is true. Write "false" if the sentence is false.

- \_\_\_\_\_ 1. A dry cell gives static electricity.
- \_\_\_\_\_ 2. Static electricity lights our homes.
- \_\_\_\_\_ 3. Static electricity causes lightning.
- \_\_\_\_\_ 4. A safe place to stay during a lightning storm is under a tree.
- \_\_\_\_\_ 5. Electricity is useful.
- \_\_\_\_\_ 6. Electricity can be dangerous.
- \_\_\_\_\_ 7. This school is wired in parallel.
- \_\_\_\_\_ 8. Your home is wired in series.
- \_\_\_\_\_ 9. A parallel circuit lets you use or shut off one appliance at a time.
- \_\_\_\_\_ 10. Appliances wired in parallel share the electrical pressure.

## REACHING OUT

*Draw these circuits. Use electrical symbols.*

1. complete series circuit

- one battery
- one switch
- three bulbs

2. complete parallel circuit

- one battery
- one switch
- three motors

3. incomplete parallel circuit

- two batteries
- two switches
- one bulb, one motor

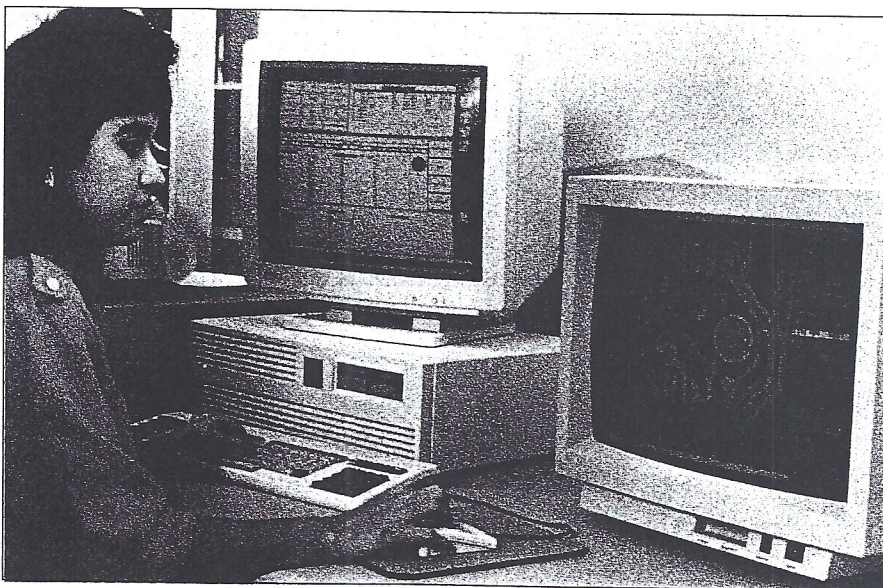


Figure G