



### ⚡ Lesson Plan: Electricity and Magnetism

**Grade Level:** 4

**Subject:** Physical Science

**Duration:** 45–60

**NGSS 4-PS3-2:** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

### 🎯 Learning Objectives

By the end of this lesson, students will be able to:

- **Define** electricity, electric current, and magnetism using appropriate vocabulary.
- **Distinguish** between series and parallel circuits and explain how current flows in each.
- **Identify** magnetic materials and explain the interaction between magnetic poles.



## PREVIEW

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### 📁 Materials Needed: (all links are included in this PDF)

- Printed copies of the Study Guide (<https://newpathworksheets.com/api/guide/study-guide-science-grade-4-electricity-and-magnetism.pdf>)
- Activity Lesson: Electricity & Magnetism (<https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-4-electricity-and-magnetism-electricity-magnetism-4.pdf>)
- Worksheet: Electricity and Magnetism Practice (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-electricity-and-magnetism-1.pdf>)



- Worksheet: Electricity and Magnetism Quiz  
(<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-electricity-and-magnetism-0.pdf>)
- Vocabulary Matching Worksheet 1  
(<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-electricity-and-magnetism-1.pdf>)

### Lesson Procedure

#### Step 1: Introduction (5 minutes)

- Hook students by asking: 'What happens when you flip a light switch? How does the light know to turn on?'
- Show the diagrams of simple and parallel circuits from the Study Guide to visualize the flow of electricity. (<https://newpathworksheets.com/api/guide/study-guide-science-grade-4>)



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- Students complete the Vocabulary Matching Worksheet to solidify term definitions.  
(<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-electricity-and-magnetism-1.pdf>)
- Assign the Practice Worksheet to test understanding of circuit types and currents.  
(<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-electricity-and-magnetism-1.pdf>)

#### Step 5: Assessment (10 minutes)



- Administer the Quiz Worksheet to assess student mastery of the lesson objectives. (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-electricity-and-magnetism-0.pdf>)
- Review answers as a class, focusing on any common misconceptions about circuits or magnetism.

### 💡 Differentiation Strategies

For advanced learners:

- Challenge students to draw their own circuit diagrams including a power source, switch, and load.
- Research real-world uses of electromagnets (e.g., junkyard cranes, MRI machines) and present to the class.



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- NewPathWorksheets: Electricity and Magnetism (<https://newpathworksheets.com/science/grade-4/electricity-and-magnetism>)
- Study Guide (<https://newpathworksheets.com/api/guide/study-guide-science-grade-4-electricity-and-magnetism.pdf>)
- Activity Lesson (<https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-4-electricity-and-magnetism-electricity-magnetism-4.pdf>)
- Worksheet 0 (Quiz) (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-electricity-and-magnetism-0.pdf>)



- Worksheet 1 (Practice) (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-electricity-and-magnetism-1.pdf>)
- Worksheet 2 (Practice) (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-electricity-and-magnetism-2.pdf>)
- Worksheet 3 (Practice) (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-electricity-and-magnetism-electricity-and-magnetism-3.pdf>)
- Vocabulary Set 1 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-electricity-and-magnetism-1.pdf>)
- Vocabulary Set 2 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-electricity-and-magnetism-2.pdf>)



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## ELECTRICITY AND MAGNETISM

### Electricity

**Electricity** is the flow of electrical charge.

Atoms are made of **three different particles**, of which some have a positive charge, some have a negative charge, and some have no charge at all. Matter usually has the **same** number of positive and negative charges, making it neutral.

**Static Electricity** is the imbalance of positive or negative charges between objects. If two objects have opposite charges, they'll pull toward each other. Objects that have the **same charge** will repel each other.

*Lesson Checkpoint: What is static electricity?*



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In a **simple circuit** that has two bulbs, if one of the bulbs burns out the other bulb will go out too.

A **parallel circuit** has two or more paths the electric charge can flow through.



In a **parallel circuit**, if one bulb goes out, the other bulb will stay lit.

**Lesson Checkpoint: What is the difference between a simple and a parallel circuit?**



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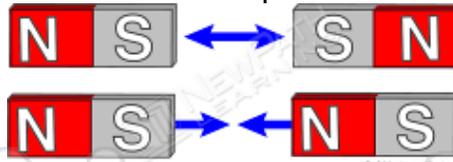
car.



**Lesson Checkpoint: What is a wet cell battery?**



Magnets have two poles, a North end and a South end. Like poles repel each other while opposite poles attract, meaning the North pole on one magnet will attract the South pole on another magnet.



### The Earth is a Magnet?

Earth acts as a large magnet, with its magnetic fields being strongest at its poles, which are not exactly at the North and South Pole.

A **compass** is a tool that has a small needle that responds to the Earth's magnetic field by always pointing North.



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the electromagnet stronger.

**Lesson Checkpoint:**  
**What is one way to strengthen an electromagnet?**

### Using Electricity and Magnets Together

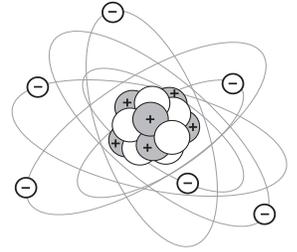
A **generator** uses magnets and wires to turn mechanical energy into electrical energy by using the wind, falling water, and even steam.



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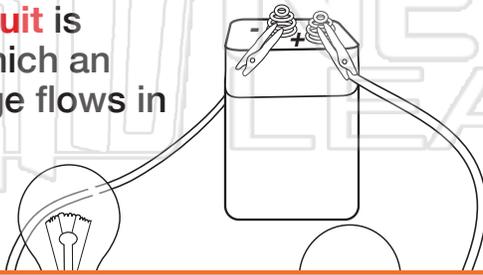
## Electricity

Atoms are made of **protons** (+ charge), **neutrons** (no charge) and **electrons** (- charge).

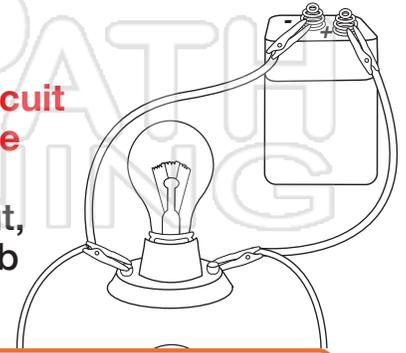


**Electricity** is the flow of electrical charges.

A **simple circuit** is a circuit in which an electric charge flows in only **1 path**.



A **parallel circuit** has **2 or more paths**. If one bulb goes out, the other bulb will stay lit.

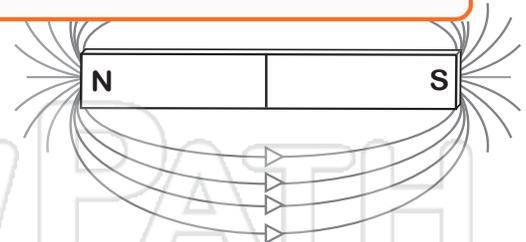


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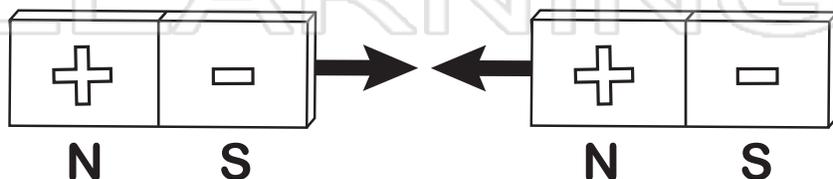
# PREVIEW

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Magnets attract certain kinds of **metals**. The invisible field around a magnet is called a **magnetic field**.



Magnets have two poles - North and South. **Like** poles **repel** each other while **opposite** poles **attract**.



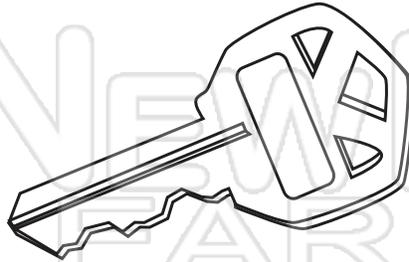




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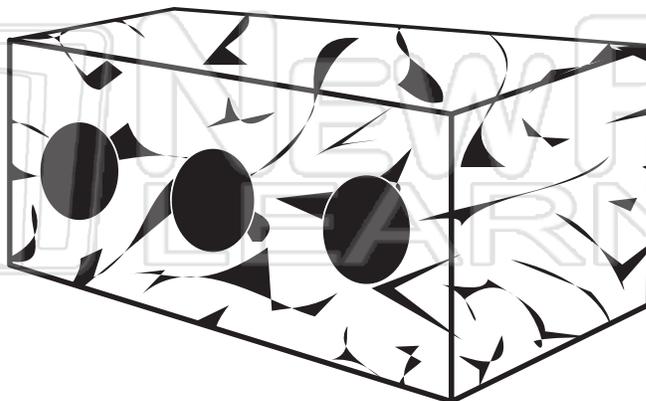
**Magnetism** is the property of attracting certain kinds of **metals**.

Color and cut out the items. Make a chart to show which are magnetic and which are not. Use a magnet to test actual items. Add more of your own.



## PREVIEW

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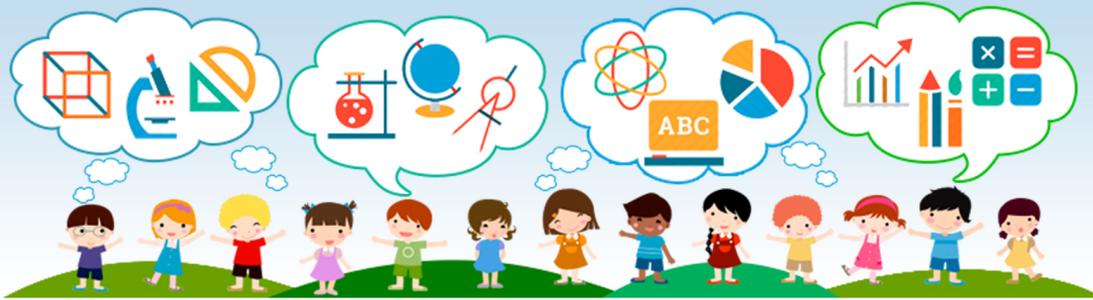
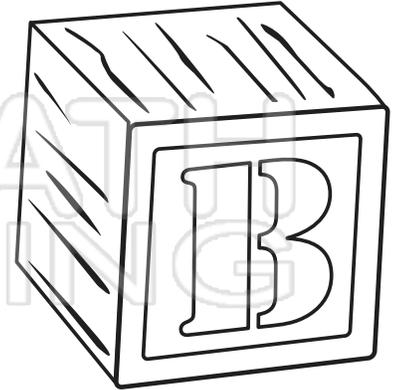
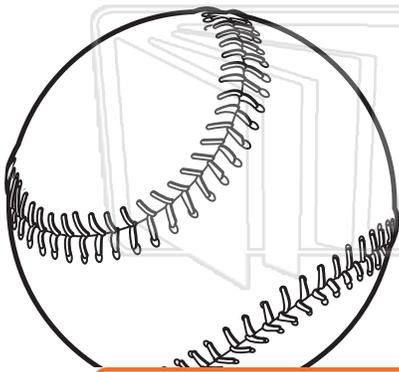




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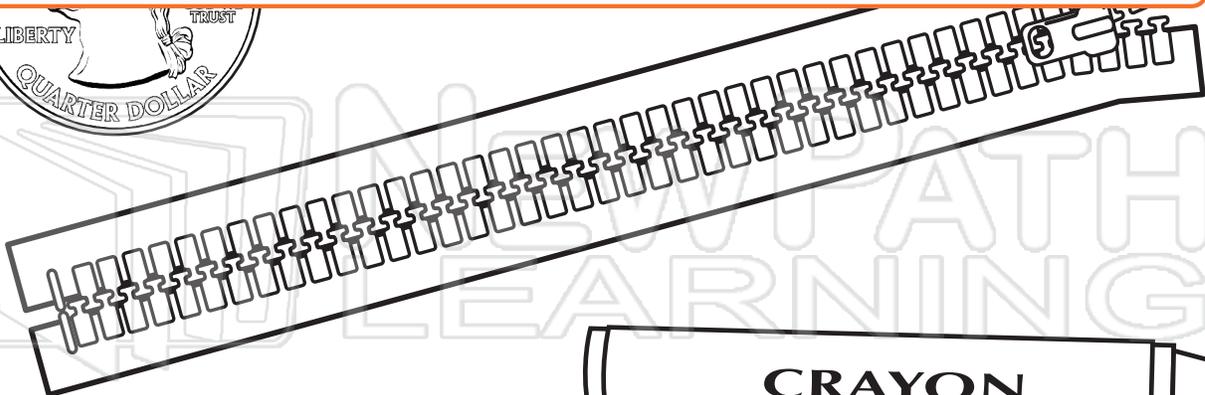
**Magnetism** is the property of attracting certain kinds of **metals**.

Color and cut out the items. Make a chart to show which are magnetic and which are not. Use a magnet to test items. Add more of your own.



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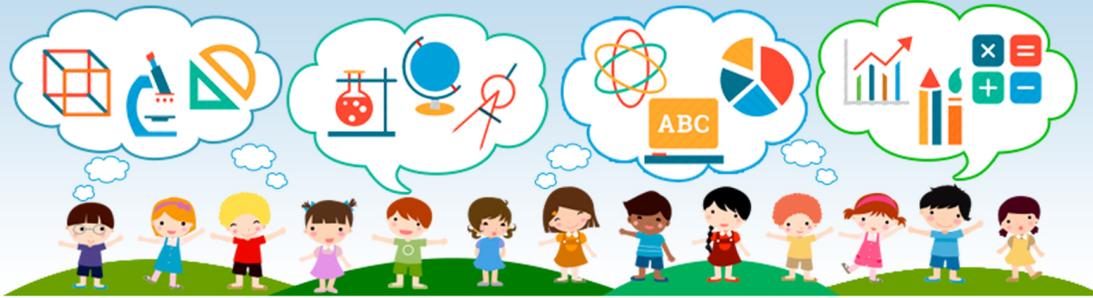
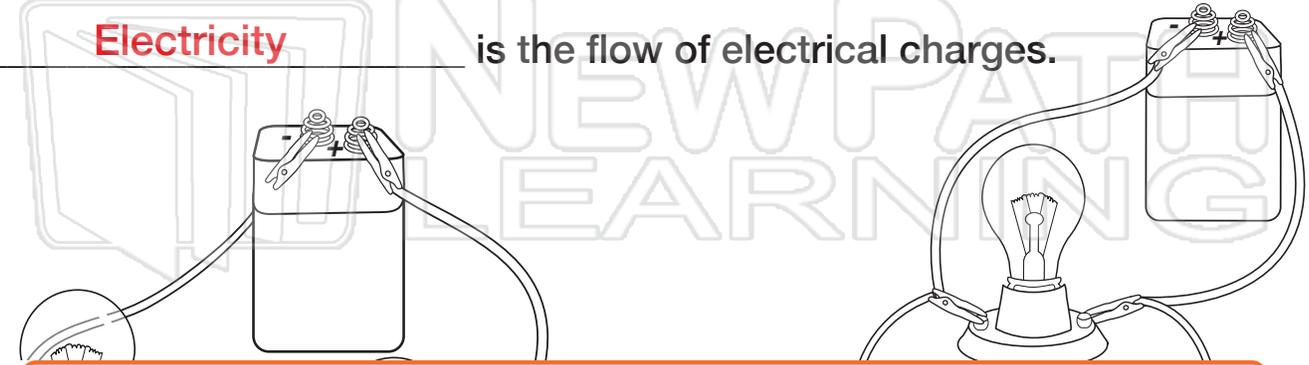


## Answer Key - Sample

Fill in the blanks.

Atoms are made of protons (+ charge), neutrons (no charge) and electrons (- charge).

Electricity is the flow of electrical charges.

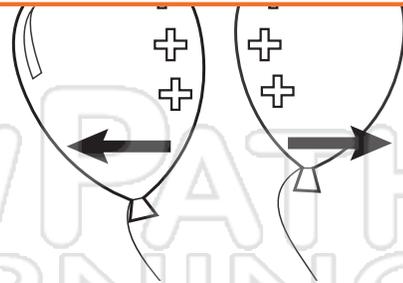
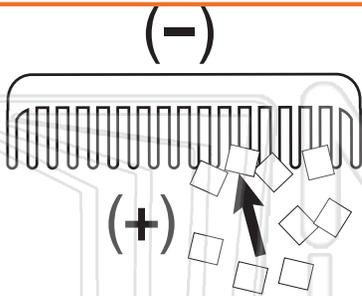


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## PREVIEW

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Objects with opposite charges will pull toward each other.

Objects with the same charge will repel each other.



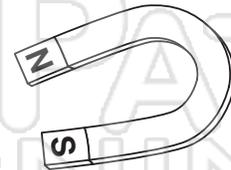
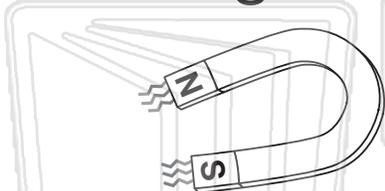
## Answer Key - Sample

**Magnetism** is the property of attracting certain kinds of **metals**.

Color and cut out the items. Make a chart to show which are magnetic and which are not. Use a magnet to test items. Add more of your own.

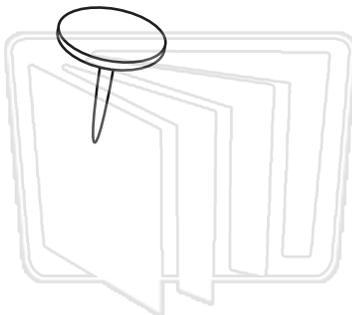
magnetic

not magnetic



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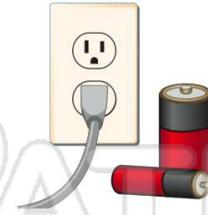
1 In a **parallel circuit**, if one bulb goes out, what happens to the other bulb?

- A the other bulb will go out
- B the other bulb will shatter
- C the other bulb will stay lit
- D the other bulb would become dimmer



2 What are the **two main types of current**?

- A CC and DD
- B AC and DC
- C AD and CD
- D AA and CC



3 An electric current that **reverses its direction at regular intervals** is called **AC**, or \_\_\_\_\_.

- A Accidental Current
- B Direct Current



4 Electric current **flowing in one direction** is called **DC**, or \_\_\_\_\_.

- A Dissecting Current
- B Diagonal Current
- C Alternating Current

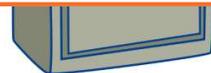


## PREVIEW

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- C its contents are frozen
- D its contents cannot be spilled

- C dry cell battery
- D wet cell battery

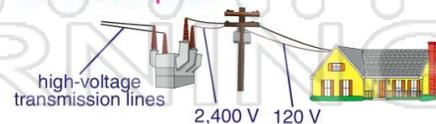


9 A \_\_\_\_\_ is a **safety device** that has a metal wire which melts and **stops the electrical current from flowing** through the circuit when the current becomes too strong.

- A switch
- B fuse
- C wire
- D circuit



10 What device allows electricity to be **transmitted** over long distances at a **fast rate of speed**?



- A fuse
- B circuit
- C transformer
- D outlet



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 In a **parallel circuit**, if one bulb goes out, what happens to the other bulb?

- A the other bulb will go out
- B the other bulb will shatter
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- D the other bulb would become dimmer



C

2 What are the **two main types of current**?

- A CC and DD
- B AC and DC
- C AD and CD
- D AA and CC



B

3 An electric current that **reverses its direction at regular intervals** is called **AC**, or \_\_\_\_\_.

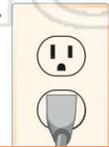
- A Accidental Current
- B Direct Current



C

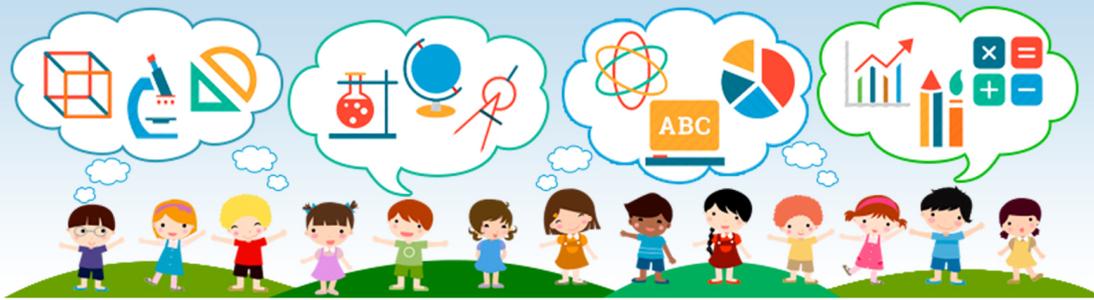
4 Electric current **flowing in one direction** is called **DC**, or \_\_\_\_\_.

- A Dissecting Current
- B Diagonal Current
- C Alternating Current



D

5



A

## PREVIEW

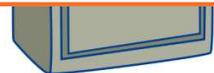
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D

- C its contents are frozen
- D its contents cannot be spilled

- C dry cell battery
- D wet cell battery



9

A \_\_\_\_\_ is a **safety device** that has a metal wire which melts and **stops the electrical current from flowing** through the circuit when the current becomes too strong.

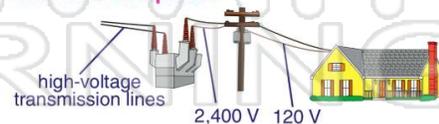
- A switch
- B fuse
- C wire
- D circuit



B

10

What device allows electricity to be **transmitted** over long distances at a **fast rate of speed**?



- A fuse
- B circuit
- C transformer
- D outlet

C



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

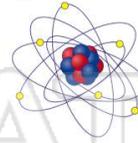
1 \_\_\_\_\_ is the **flow of electrical charge**.

- A Reflection
- B Electricity
- C Conversion
- D Inertia



2 \_\_\_\_\_ are made of **three different particles**. Some have a positive charge, some have a negative charge, and some have no charge at all.

- A Gases
- B Liquids
- C Solids
- D Atoms



3 Matter usually has the **same** number of positive and negative charges, making it **neutral**. If something had a charge of **-5**, what charge would make it **neutral**?

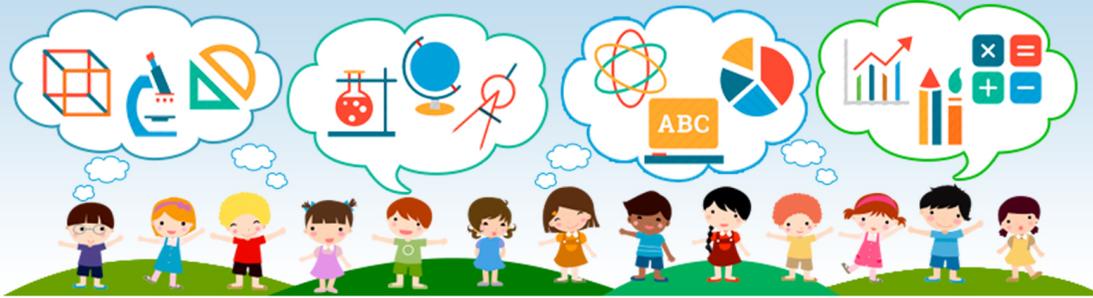
- A -3

4 The **imbalance** of positive or negative charges **between** objects is called \_\_\_\_\_.

- A static electricity
- B frequency



5



## PREVIEW

7

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- C energy source that causes electric charges to flow
- D become magnetic

- D backwards



9

What happens in a **simple series circuit** that has two bulbs if **one of the bulbs burns out**?

- A the other bulb will burn dimmer
- B the other bulb will burn brighter
- C the other bulb will stay lit
- D the other bulb will go out too



10

A(n) \_\_\_\_\_ circuit has **two or more paths** the electric charge can flow through.

- A parallel
- B series
- C open
- D closed





Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 \_\_\_\_\_ is the **flow of electrical charge**.

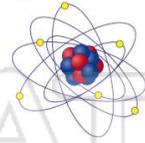
- A Reflection
- B Electricity
- C Conversion
- D Inertia



(B)

2 \_\_\_\_\_ are made of **three different particles**. Some have a positive charge, some have a negative charge, and some have no charge at all.

- A Gases
- B Liquids
- C Solids
- D Atoms



(D)

3 Matter usually has the **same** number of positive and negative charges, making it **neutral**. If something had a charge of **-5**, what charge would make it **neutral**?

- A -3

(D)

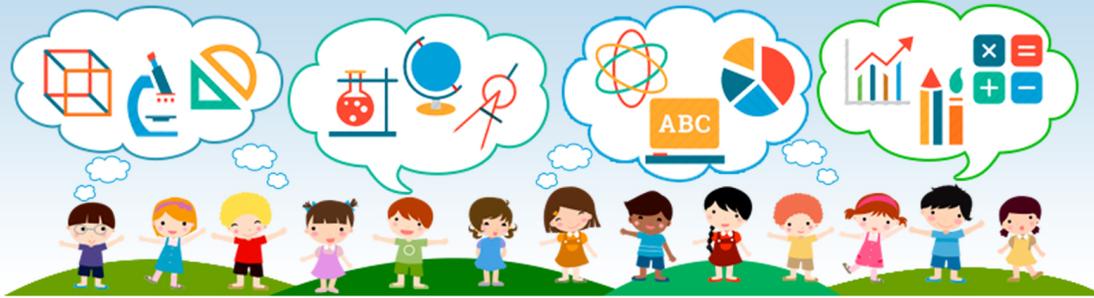
4 The **imbalance of positive or negative charges between** objects is called \_\_\_\_\_.

- A static electricity
- B frequency



(A)

5



(C)

## PREVIEW

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(B)

- C energy source that causes electric charges to flow
- D become magnetic

- D backwards



9

What happens in a **simple series circuit** that has two bulbs if **one of the bulbs burns out**?

- A the other bulb will burn dimmer
- B the other bulb will burn brighter
- C the other bulb will stay lit
- D the other bulb will go out too



(D)

10

A(n) \_\_\_\_\_ circuit has **two or more paths** the electric charge can flow through.

- A parallel
- B series
- C open
- D closed



(A)



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

### Match each of the following terms to its definition:

Direct current (DC)

Generator

Electricity

Alternating current (AC)

Fuse

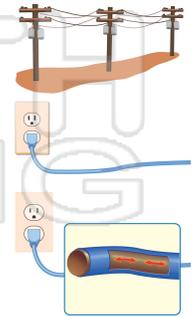
Electromagnet

Dry cell battery

Compass

1. for an electric current

- the flow of electrical charge; another name



2. electrical charges in a circuit flow back and forth

- a type of electrical current in which the

3. magnetic field of Earth



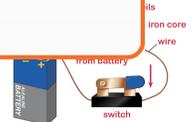
4. charged particles

5. magnetic field

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6. current



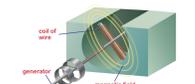
7. a safety device that melts and stops the electrical current from flowing through the circuit when the current becomes too strong

- a safety device that has a metal wire which



8. a device that uses magnets and wires to turn mechanical energy into electrical energy by using the wind, falling water, and even steam

- a device that uses magnets and wires to





Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

### Match each of the following terms to its definition:

Direct current (DC)

Generator

Electricity

Alternating current (AC)

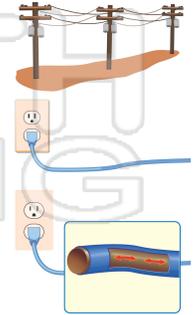
Fuse

Electromagnet

Dry cell battery

Compass

1. **electricity** - the flow of electrical charge; another name for an electric current



2. **alternating current (AC)** - a type of electrical current in which the electrical charges in a circuit flow back and forth

3. **conductor** - a material that has free electrons that can move and carry an electric current

4. **direct current (DC)** - a flow of electrical charges in only one direction

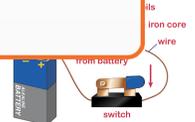
5. **dry cell battery** - a battery that does not need to be recharged

6. **electromagnet** - an electrical device that uses an electric current to create a magnetic field

**PREVIEW**

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7. **fuse** - a safety device that has a metal wire which melts and stops the electrical current from flowing through the circuit when the current becomes too strong



8. **generator** - a device that uses magnets and wires to turn mechanical energy into electrical energy by using the wind, falling water, and even steam

