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Mr Circuit Technology

Science/Electronics Experiment Kits and Labs

“BASIC ELECTRON THEORY”

LESSON PLAN

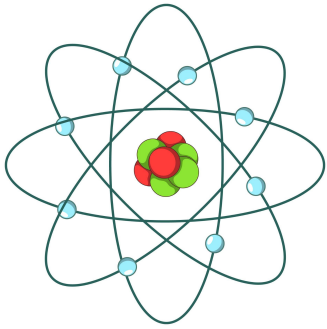
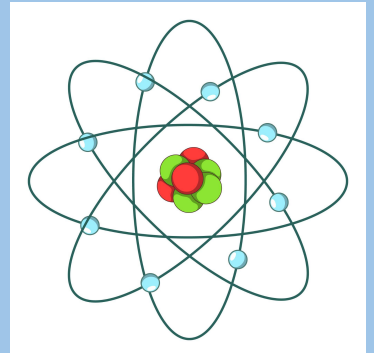


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Purchase Order to Gary@MrCircuitTechnology.com or
order online at www.MrCircuitTechnology.com



PREPARATION: You can put the Page 10 poster up on your classroom wall to announce the fact that you are going to do this Science-Electronics Lesson.

Step 1 - Make a copy of pages 1 through 6 for each student. The students can read and do these pages on their own or you can guide them.

Step 2 - When your students have completed reading the Lesson, the Crossword Puzzle, Word Search Puzzle, and the Written Quiz, collect all their work for grading using the Answer Keys in this Lesson Plan.

For Tech Support or any questions, you can email us or call 805-295-1642

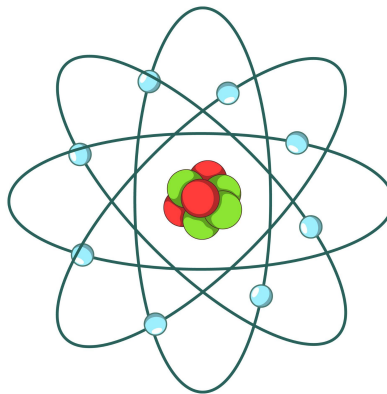
LESSON 1 (page 1 of 3)

MC1-001-R-1

MATTER: Everything you see around you is made of **MATTER**: the desk, the pen, the paper, water, and even yourself. **MATTER** is something that has mass and takes up space.

ELEMENTS: At this point, you may ask, “What is **MATTER** made of? **MATTER** is made of **ELEMENTS** which are substances found naturally in the **UNIVERSE** such as hydrogen, carbon, oxygen, silver, gold, etc. There are around **104** naturally occurring elements in the universe.

An ATOM

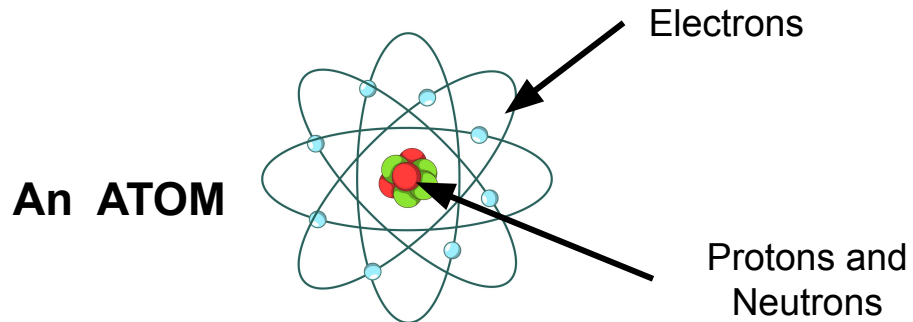


ATOMS: Now the next question you may ask is, “What are **ELEMENTS** made of?” Each **ELEMENT** is made of **ATOMS**.

An **ATOM** is too small to be seen with the “naked eye”. It has a central core called a **NUCLEUS** and many **ELECTRONS** in orbit around the central core.

(Continue to Page 2)

In the NUCLEUS there are PROTONS, NEUTRONS, and other particles. PROTONS are charged positively and NEUTRONS have no electrical charge.



ELECTRONS: Surrounding the NUCLEUS, in several orbits are negatively charged particles called ELECTRONS. They have a negative charge. All ATOMS are so constructed regardless of whether they constitute an element of Hydrogen or gold.

The only difference between one ATOM and another is the number of PROTONS, NEUTRONS, and ELECTRONS that each ATOM has.

For example, an ATOM of hydrogen has one PROTON and one ELECTRON and no NEUTRONS. Gold has 79 PROTONS, 79 ELECTRONS, and 118 NEUTRONS.

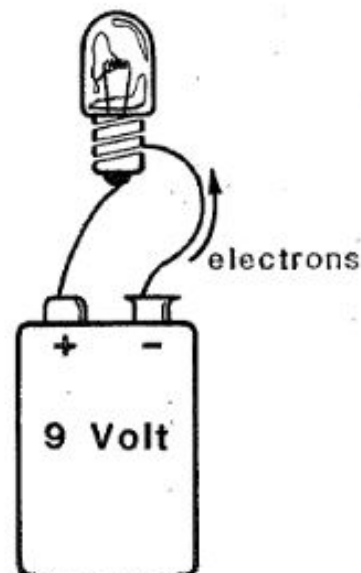
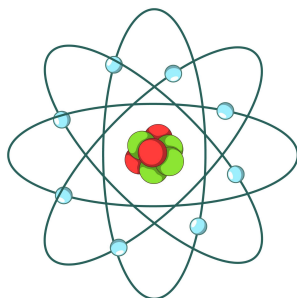
(Continue to Page 3)

ELECTRONS and ELECTRON CURRENT: Now you can say, “OK, I understand that everything is made up of ATOMS and that ATOMS have PROTONS and NEUTRONS inside the NUCLEUS with ELECTRONS traveling in orbits around the NUCLEUS. But . . . what does this have to do with ELECTRONICS?”

The answer to that question is that ELECTRONICS is the part of the subject called PHYSICS that studies the movement of electrons called ELECTRON CURRENT.

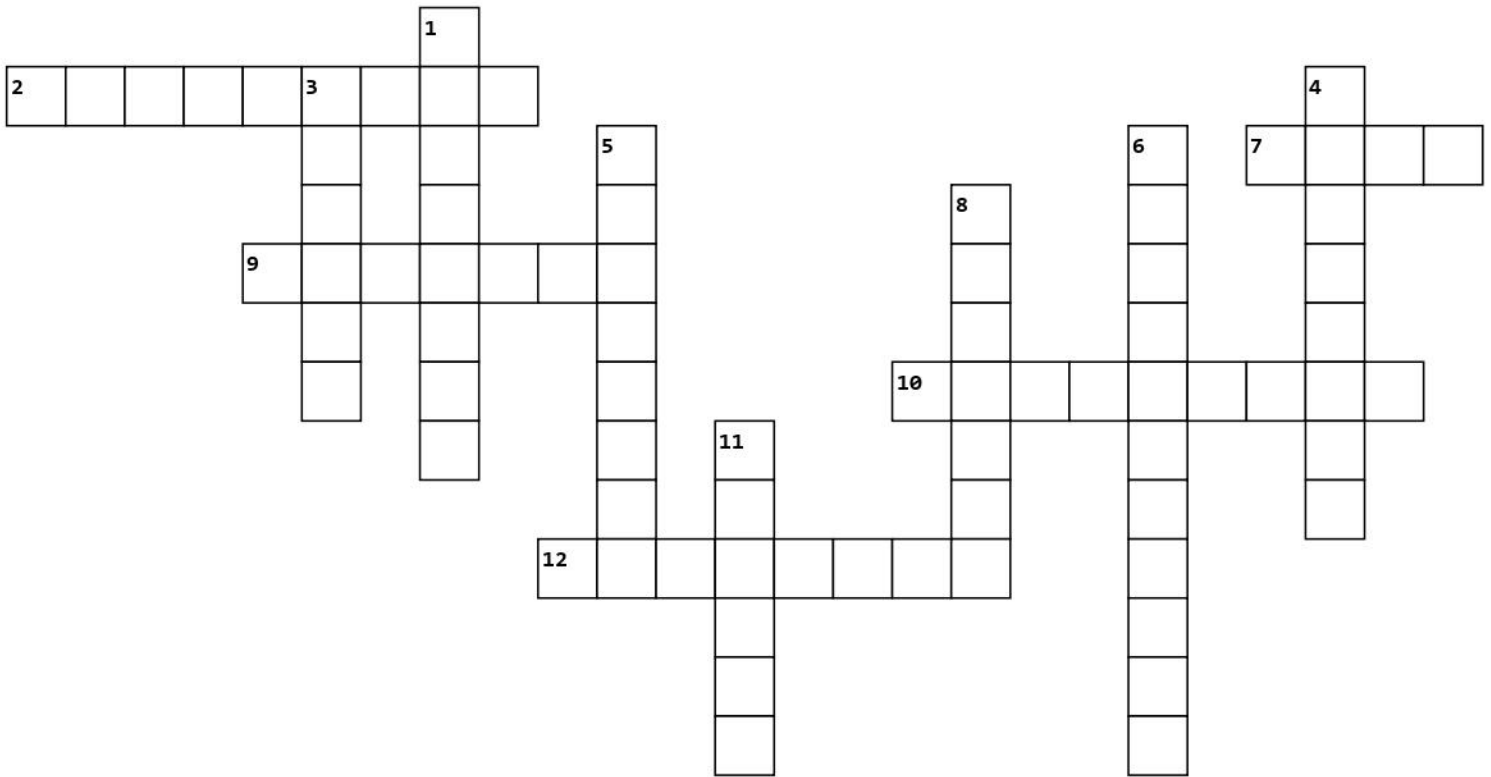
ELECTRON CURRENT is the movement of millions and millions of electrons through a conductor or wire.

When we connect an light bulb to a battery, the light bulb emits light because of the ELECTRONS flowing through it.



(End of Lesson 1)

Lesson 1 - "Basic Electron Theory"



Across

- 2. ELECTRONS, NEUTRONS, and PROTONS are called _____.
- 7. Electron _____ is the movement of electrons in a conductor.
- 9. In the center of an ATOM are Neutrons and _____.
- 10. In orbits around the NUCLEUS are particles known as _____.
- 12. In the NUCLEUS are PROTONS and _____.

Down

- 1. The charge on an ELECTRON is _____.
- 3. A NEUTRON has no electrical _____.
- 4. What do ATOMS make up?
- 5. The charge on a PROTON is _____.
- 6. The part of PHYSICS that studies ELECTRON FLOW is called _____.
- 8. In the center core of an ATOM is the _____.
- 11. Everything around you is made of _____.

Lesson 1 - "Basic Electron Theory"

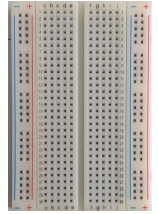
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H A L H L J D G E T M R S D W H S F P U
G Y T T R E O Z V V A L Y K L J D T Q N
T P P T I U M F V H L D C S C S V F J Z
S G N U E D C E T J N U S C Y G X E H P
Z U L W E R K Z N A U B N S C O D V U D
F F Y X E L S G V T I P O C B G O A Q P
J M E R A Y C C H A S O R I B G K W C E
I B G M V E T I N R A S T N W K J I D S
N Y A O O D H T Z X X I C O M V S M K N
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W Q O E R R Y U I S J I L T O Q L E J T
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X S Q I O Q N Z L U R U W E O J R H P D
O X R V K O N E W M T T S G S W A C S L
V I I E I W D U N E U T R O N S P Y R U
I E H L G U E G X C R Y Y L W A O L E F
R M Y E K G T N A N Y Y W I U C Z G G W

1. Everything around you is made of _____ .
2. What do ATOMS make up?
3. In the center of an ATOM are Neutrons and _____ .
4. In orbits around the NUCLEUS are particles known as _____ .
5. In the NUCLEUS are PROTONS and _____ .
6. In the center core of an ATOM is the _____ .
7. ELECTRONS, NEUTRONS, and PROTONS are called _____ .
8. The charge on an ELECTRON is _____ .
9. The charge on a PROTON is _____ .
10. The part of PHYSICS that studies ELECTRON FLOW is called _____ .
11. Electron _____ is the movement of electrons in a conductor.
12. A NEUTRON has no electrical _____ .



QUIZ for Lesson 1 in the Mr Circuit Lab 1 (Page 6)

QUIZ for Lesson 1 - "Basic Electron Theory"



Circle the letter for your answer to each question and then hand this quiz in to your teacher.

A #1 Everything around you is made of _____ .

- B A. wood
- C B. matter
- D C. steel
- A D. water

#6 Atoms have a central core called _____ .

- A. a middle section
- B. a nucleus
- C. a slice
- D. a modicum

A #2 Matter is made up of _____ .

- B A. water
- C B. steel
- D C. elements
- A D. wood

#7 What are the positively charged particles in an atom called?

- A. protons
- B. products
- C. add ons
- D. neutrons

A #3 Atoms are what make up _____ .

- B A. elements
- C B. protons
- D C. electrons
- A D. neutrons

#8 A particle in an atom that has no electrical charge is called _____ .

- A. a nothing
- B. a widget
- C. a neutron
- D. an axion

A #4 In the nucleus of _____ are protons and neutrons.

- B A. an electron
- C B. a proton
- D C. an atom
- A D. a neutron

#9 The part of Physics that studies the movement of electrons is called _____ .

- A. resistance
- B. conductance
- C. capacitance
- D. electronics

A #5 The movement of electrons from atom to atom is called _____ .

- B A. an electron current
- C B. an electron charge
- D C. an electron resistance
- A D. a neutron flow

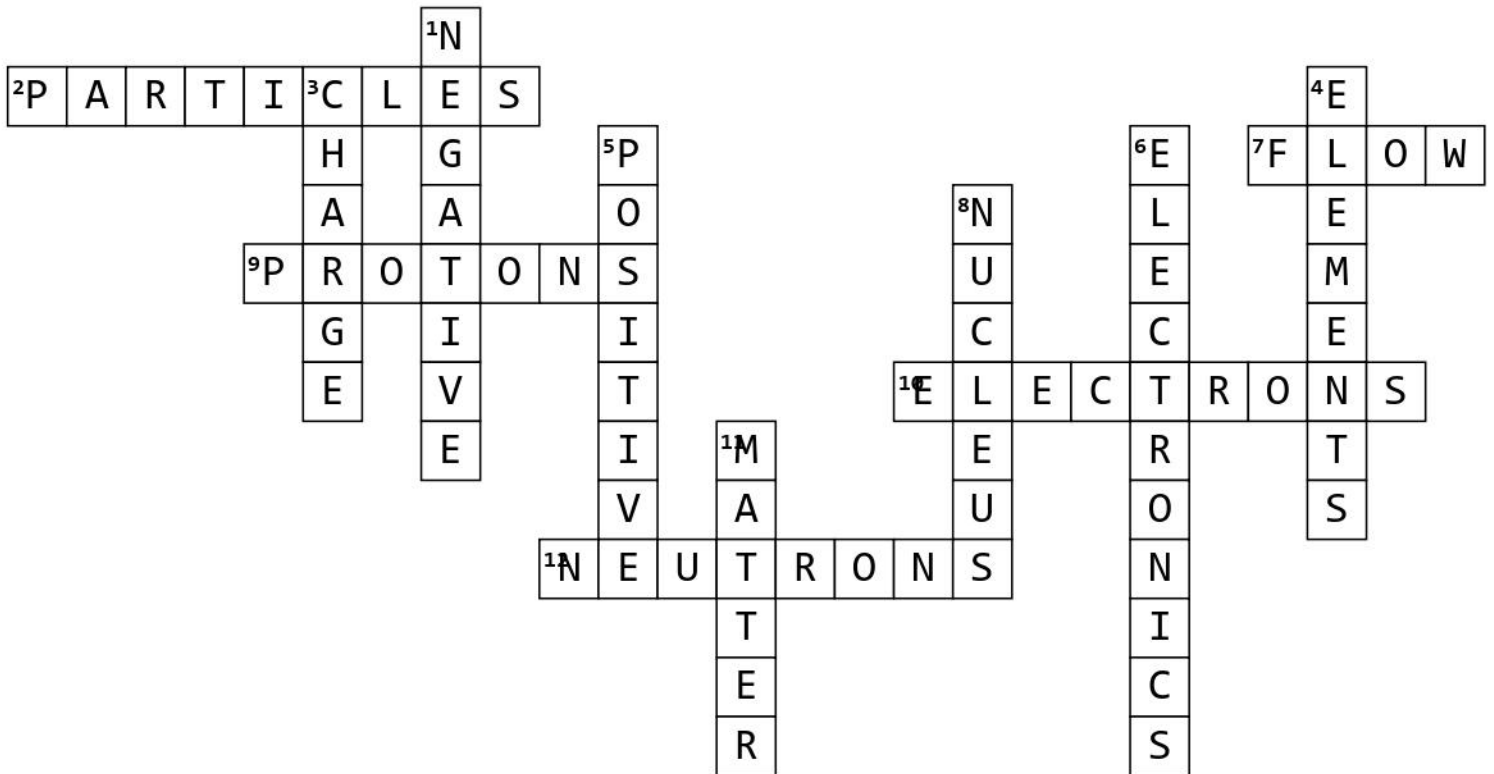
#10 What circulates through the filament of an incandescent bulb to make it light up?

- A. electrons
- B. magnets
- C. protons
- D. neutrons

Score	
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ANSWERS FOR CROSSWORD

Lesson 1 - "Basic Electron Theory"



Across

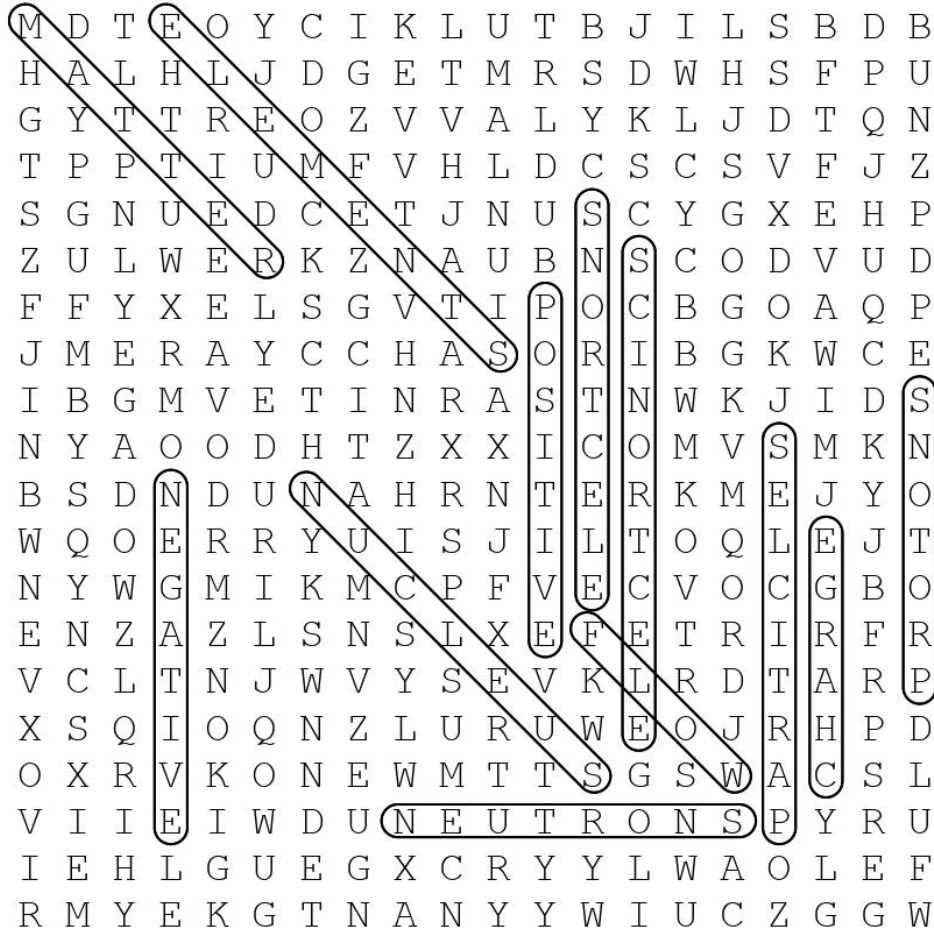
2. ELECTRONS, NEUTRONS, and PROTONS are called _____ .
7. Electron _____ is the movement of electrons in a conductor.
9. In the center of an ATOM are Neutrons and _____ .
10. In orbits around the NUCLEUS are particles known as _____ .
12. In the NUCLEUS are PROTONS and _____ .

Down

1. The charge on an ELECTRON is _____ .
3. A NEUTRON has no electrical _____ .
4. What do ATOMS make up?
5. The charge on a PROTON is _____ .
6. The part of PHYSICS that studies ELECTRON FLOW is called _____ .
8. In the center core of an ATOM is the _____ .
11. Everything around you is made of _____ .

ANSWERS FOR WORD SEARCH

Lesson 1 - "Basic Electron Theory"

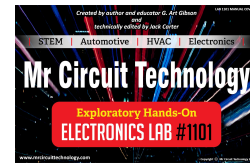


1. Everything around you is made of _____ .
2. What do ATOMS make up?
3. In the center of an ATOM are Neutrons and _____ .
4. In orbits around the NUCLEUS are particles known as _____ .
5. In the NUCLEUS are PROTONS and _____ .
6. In the center core of an ATOM is the _____ .
7. ELECTRONS, NEUTRONS, and PROTONS are called _____ .
8. The charge on an ELECTRON is _____ .
9. The charge on a PROTON is _____ .
10. The part of PHYSICS that studies ELECTRON FLOW is called _____ .
11. Electron _____ is the movement of electrons in a conductor.
12. A NEUTRON has no electrical _____ .

**QUICK-CHECK ANSWER KEY for Lesson 1 QUIZ
for Mr Circuit Electronics Training ("Basic Electron Theory")**

Place this sheet over top of the STUDENT QUIZ (offset a little to the left and then offset to the right) to compare the answers on this sheet to the answers that the student marked. Put an 'X' for each wrong answer.

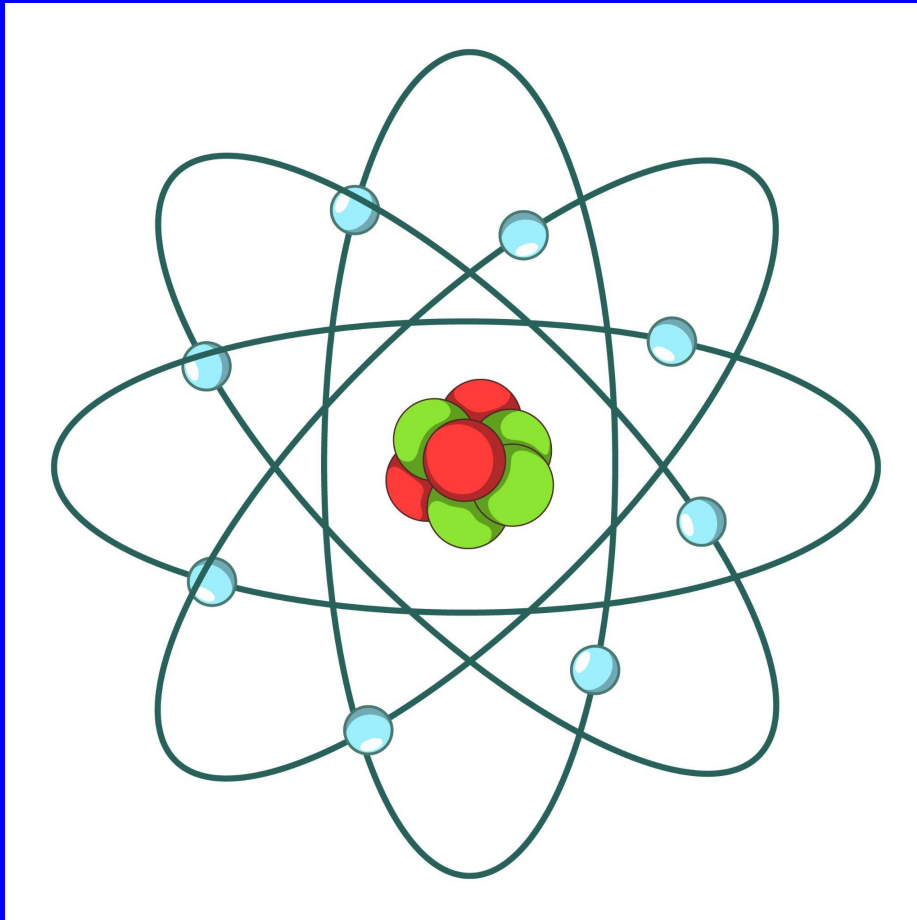
Count the right answers and record the score of right answers in your grade book.



<p>A B C D</p>	<p>#1 Everything around you is made of ____ .</p> <p>A. wood B. matter C. steel D. water</p>	<p>#6 Atoms have a central core called _____ .</p> <p>A. a middle section B. a nucleus C. a slice D. a modicum</p>	<p>A B C D</p>
<p>A B C D</p>	<p>#2 Matter is made up of _____ .</p> <p>A. water B. steel C. elements D. wood</p>	<p>#7 What are the positively charged particles in an atom called?</p> <p>A. protons B. products C. add ons D. neutrons</p>	<p>A B C D</p>
<p>A B C D</p>	<p>#3 Atoms are what make up _____ .</p> <p>A. elements B. protons C. electrons D. neutrons</p>	<p>#8 A particle in an atom that has no electrical charge is called _____ .</p> <p>A. a nothing B. a widget C. a neutron D. an axion</p>	<p>A B C D</p>
<p>A B C D</p>	<p>#4 In the nucleus of _____ are protons and neutrons.</p> <p>A. an electron B. a proton C. an atom D. a neutron</p>	<p>#9 The part of Physics that studies the movement of electrons is called _____ .</p> <p>A. resistance B. conductance C. capacitance D. electronics</p>	<p>A B C D</p>
<p>A B C D</p>	<p>#5 The movement of electrons from atom to atom is called _____ .</p> <p>A. an electron current B. an electron charge C. an electron resistance D. a neutron flow</p>	<p>#10 What circulates through the filament of an incandescent bulb to make it light up?</p> <p>A. electrons B. magnets C. protons D. neutrons</p>	<p>A B C D</p>

**BUILD A BETTER FUTURE by
UNDERSTANDING SCIENCE**

EVERYTHING IS MADE OF ATOMS



BASIC ELECTRONICS LAB 1

“BASIC ELECTRON THEORY”

(Poster MC1-001-P01)

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