

UNIT 4: ELECTRICITY BASICS

READING

1. Read the following questions. Discuss the answer together with your partner and write it down.

1) What is one unit of measurement in electricity?

2) Why is copper wire used in electrical wiring?

USEFUL LANGUAGE

Talking about units:

- *One unit of measurement is ...*
- *For example: volts / amperes / ohms / watts*

Talking about use and function:

- *... is used to + verb*
- *... is used for + noun*

Talking about reasons:

- *because + subject + verb*
- *due to + noun*

Technical verbs:

- *conduct electricity*
- *allow current to flow*

2. Read the text.

2 **Electricity Basics**

The Basics of Electricity

Professor Vanessa Thompson
Tuesday, Thursday 12-2

In this class, students learn about the basics of electricity. First, they learn how electricity is created. This leads to an in-depth study of electrons. Then students learn about electrical charge, current, and resistance. They also find out how a material conducts current. Finally, students learn how to measure electricity. They study units of measurement such as amperes, volts, ohms, and watts. At the end of the class, students do a final project. Each student builds his or her own electrical circuit.

electricity

volt

voltmeter

current

conduct

True or false?

- 1) Electrons are a unit of measurement.
- 2) Students learn about electrical currents.
- 3) The final project is a written exam.
- 4) The class is about advanced electronics.
- 5) Students study how electricity is created.
- 6) They learn about electrons in detail.
- 7) Students do not learn how to measure electricity.
- 8) Amperes and volts are units of measurement.
- 9) The course is taught once a week.
- 10) Students build an electrical circuit at the end of the class.

VOCABULARY **3. Match the words with the definitions (A–H).**

ohm – ampere – electron – circuit – resistance – current – conduct – charge

A) The flow of electricity : _____

B) A unit that measures electrical resistance : _____

C) How much an object opposes an electric current passing through it : _____

D) A system of electrical conductors that electricity flows through : _____

E) The act of electricity passing through an object: _____

F) The electric property of an object that makes it have an attractive or repulsive force: _____

G) The particle in an atom that carries electric currents: _____

H) The base unit of an electric current: _____

4. Choose the sentence that uses the underlined part correctly.**1)**

A) The electrical circuit is the base unit of current.

B) The battery produces low volts of electricity.

2)

A) The light bulb consumes 60 watts.

B) He connected the ampere to the wire.

3)

A) The lightning ohm was so powerful, it knocked a tree down.

B) The resistance of an object depends in part on the material it's made from.

LISTENING 

5. Listen and read the course description again. What will students complete as a final project? Fill in the gaps.

Students will complete a final project at the end of the class. The project will require them to _____ their own _____.

6. Listen to a conversation between a professor and a student. Mark the following statements as True or False.

- 1) The student was confused about resistance.
- 2) The professor gave an example of an object with resistance.
- 3) The more resistance, the more current that passes through.

7. Listen again and complete the conversation.

Student: Excuse me, Professor Thompson. I was 1) _____ by some of the stuff you said today.

Professor: Okay. What were you confused about?

Student: Well, can you clarify what 2) _____ is, please?

Professor: Of course. Resistance is how much a material opposes an electrical 3) _____.

Student: Okay. But how does it 4) _____, exactly?

Professor: Some materials are made up of insulators that block current from passing through. This 5) _____ is electrical resistance.

Student: So, the 6) _____ current allowed through, the more resistance?

Professor: Exactly.

SPEAKING 

8. Complete the conversation below based on Task 7, with the phrases given. Then, take roles and act it out.

USE LANGUAGE SUCH AS:*Excuse me ...**Can you clarify ... ?**Exactly.*

Student A: You are a student in an electronics course. Ask Student B about:

- something from the lecture you didn't understand
- units of measurement
- what the units measure

Student B: You are a professor in an electronics course. Talk to Student A about units of measurement.

It is the unit of measurement of an electric current. - A watt is the unit of measurement of electric power. - What were you confused about?

A: Excuse me, Professor Jones. I was confused by some of the things you said today.

B: No problem. _____

A: Well, can you clarify what you mean by ampere?

B: Sure. _____

A: Oh, okay. But what's the difference between amperes and watts?

B: _____

A: OK. I see the difference now.

B: Good.

WRITING 

9. Use the conversation from Task 8 to fill out the student's notes.

Electricity 101

Monday, 8-10

What are some units of measurement for electricity?

An and a are some units of measurement for electricity.

How are they different?

A(n) measures current, and a(n) measures electric .

EXTRA PRACTICE**10. Watch the video. Choose the correct answer.****1) Which of these are NOT found in a nucleus?**

- a. electrons
- b. protons
- c. neutrons

2) What is electronics concerned with?

- a. the movement of protons
- b. the nucleus of the atom
- c. the movement of electrons

3) What is an insulator?

- a. a material that permits the flow of electrons
- b. a material that prevents the flow of electrons
- c. the outer shell of an atom

4) Which electrons are the first to react with other atoms?

- a. the valence electrons
- b. the electrons with high ionization energy
- c. the electrons with no ionization energy

5) In what order do orbitals fill up with electrons?

- a. the valence electrons are first
- b. the valence electrons are last
- c. there is no order

6) In general, which are better conductors?

- a. metals
- b. non-metals
- c. insulators

CONVERSATION WITH ROBBY

Situation:

The assistant is a new student in your class. You must explain what you are studying now and what you learned last term.

1. Talking about electricity basics

You can use these structures:

About current

Current is ...

It is the flow of ...

About resistance

Resistance is ...

It means how much a material ...

About units

One unit of measurement is ...

It is measured in ... (amps / volts / watts)

About copper

Copper is used because ...

It conducts electricity / allows current to flow.

2. Talking about last term

Use at least one or two sentences:

Last term, we learned about ...

We practised ...

We studied how to ...

This is useful because ...

3. Rules for the activity

- Speak in full sentences.
- Do not answer only “yes / no / nothing”.
- Help your partner if they get stuck.