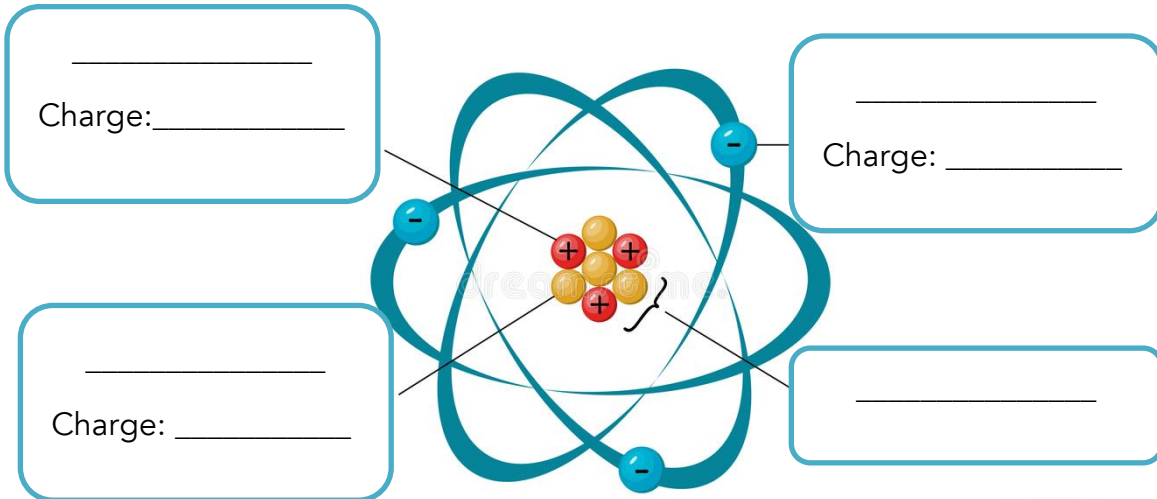


UNIT 6. ELECTRICITY - REVIEW

ELECTRICITY & ELECTRICAL CHARGES

1. Complete the labels using the words from the box.

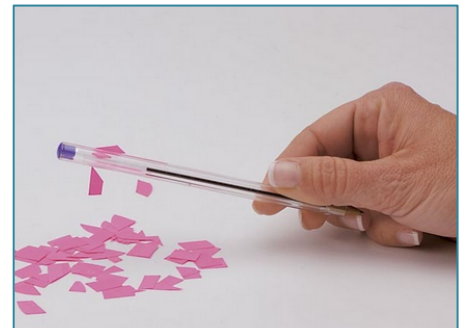
proton - neutral - positive - neutron - negative - electron -
nucleus - particles



Atoms are the smallest
_____ in matter

2. Why do pieces of paper stick to the pen? After rubbing a pen against a wool jumper, small piece will stick to the pen. Tick (✓) the option which correctly explain why it happens.

- A. The pieces of paper are negatively charged.
- B. The pen has becomes electrically charged.
- C. The pen is electrically neutral.
- D. The pen is now sticky.
- E. The pieces of paper are positively charged.

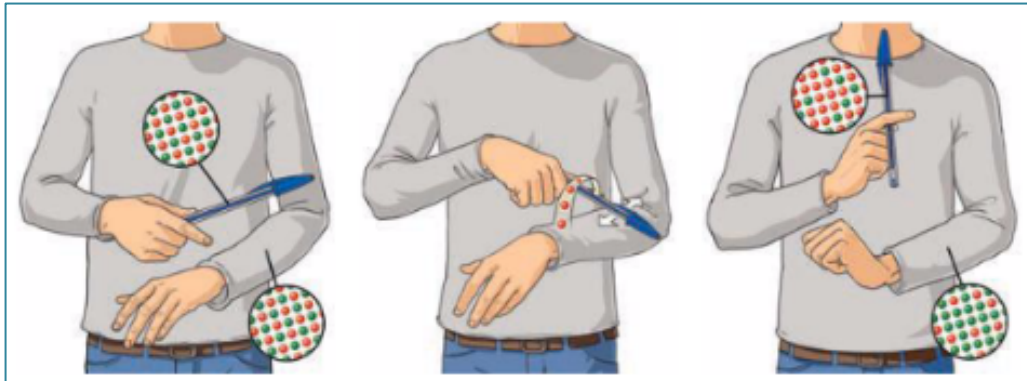


- How is the pen able to pick up pieces of paper? _____

3. Is the following statement true or false? Explain.

In general, objects are neutral because they have no charges in them.

4. Look at the picture and answer the questions.



• How are the pen and the jumper electrically charged in the first picture?

• What causes the exchange of electrical charges? _____

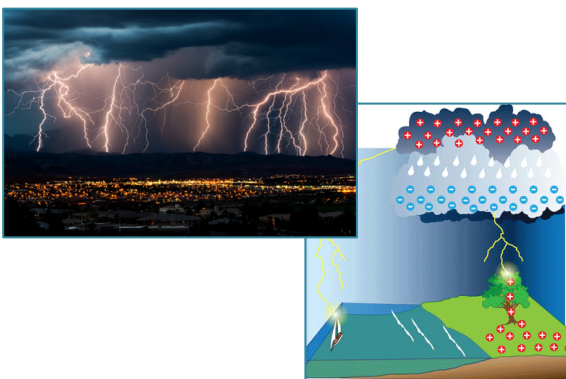
5. Do these objects repel or attract?

a. Both objects are positively charged. → _____

b. Both objects are negatively charged. → _____

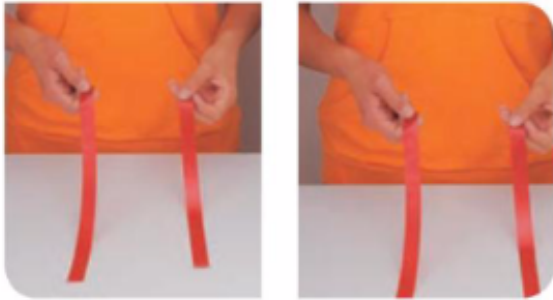
c. One object is positively charged; the other is negatively charged. → _____

6. Look at these pictures. Can you explain what causes lightning during storms?



7. Read this experiment and answer the question.

We stick two stripes of adhesive tape to a table. Next, we firmly pull up both strips. Now, when we hold the strips close together, they push away from each other.



Explain what has happened in terms of electrical charges. _____

ELECTRIC CURRENT

8. Materials can be classified depending on how well they conduct electricity. Do you think the materials in the box are insulators or conductors? Classify them.

trees - copper - glass - plastic - rubber - water -
silver - wood - gold - aluminium - air

ELECTRICAL CONDUCTORS	ELECTRICAL INSULATORS

9. Look at the cables. What materials are electrical cables made of?

Why? _____

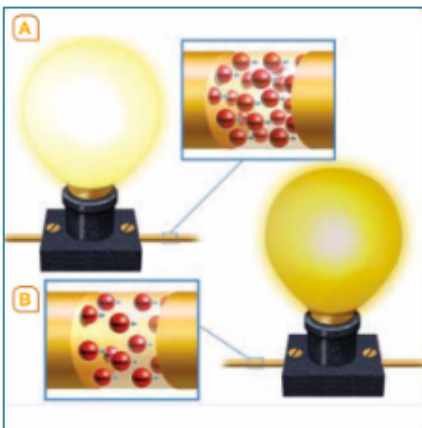


10. Why should a person wear rubber-soled shoes when they work with electricity?

11. Complete the sentences about the effects of electric current using the correct words.

movement - light - magnet - chemical changes - heat - sound

1. In an iron, a heater or a toaster, electric current produces _____ .
2. In batteries, electric currents can cause _____ .
3. In light bulbs and TV screens, electric current produces _____ .
4. When electric current flows through a metal object, like a nail, it behaves like a _____ .
5. In loudspeakers on a stereo or a computer, electric current is transformed into _____ .
6. In fans, juicers or drills, electric current produces _____ .



12. Look at the light bulbs. Which picture illustrates the strongest electric current? How do you know?

13. When we switch an electrical fan from low power to high power, what happens inside the cable? _____

14. What effect does electric current produce when flowing through these objects?

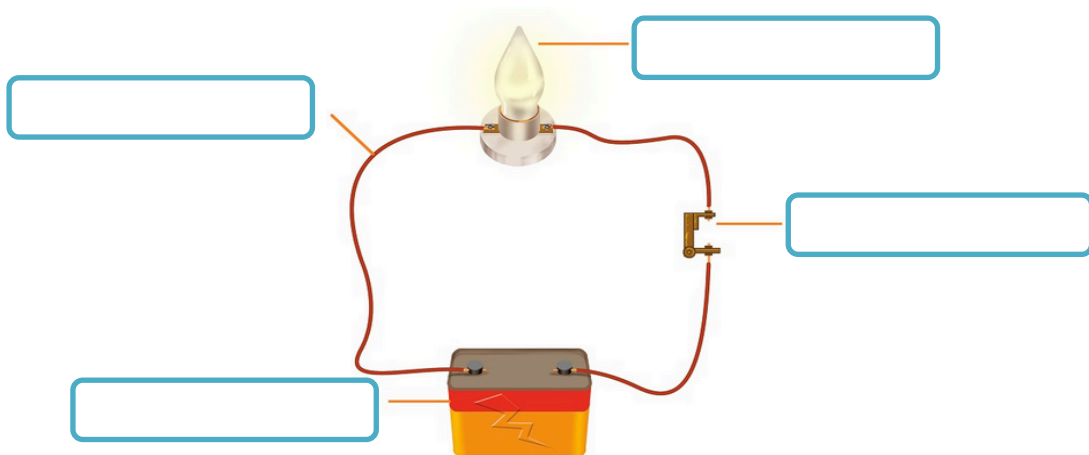
- a tablet screen → _____
- a mobile battery → _____
- an oven → _____
- a blender → _____
- a doorbell → _____

ELECTRIC CIRCUITS

15. Write the words for the components a simple electric circuit. Then, label each component of the electric circuit with the correct name.

generator - device - cable - switch

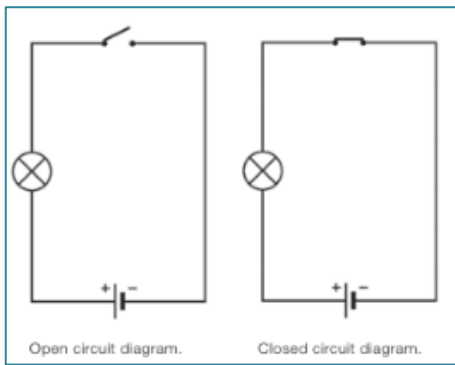
- It transforms the electricity in the circuit into another type of energy. _____
- It provides the electricity for the circuit. _____
- It transports the electricity around the circuit. _____
- It controls the flow of electricity. _____



16. Complete.

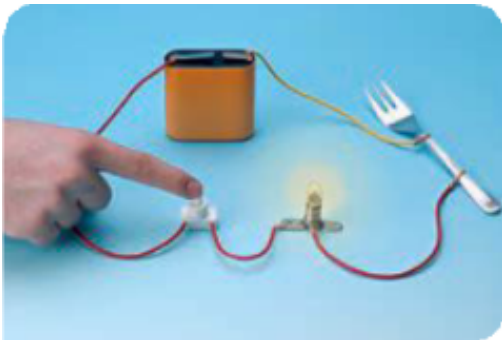
- When we connect a wire to a battery, electrons flow through producing and _____
- Electrical current goes to the positive pole to the _____
- Conductors allow electricity flow through them. All metals, such as _____ are good conductors.

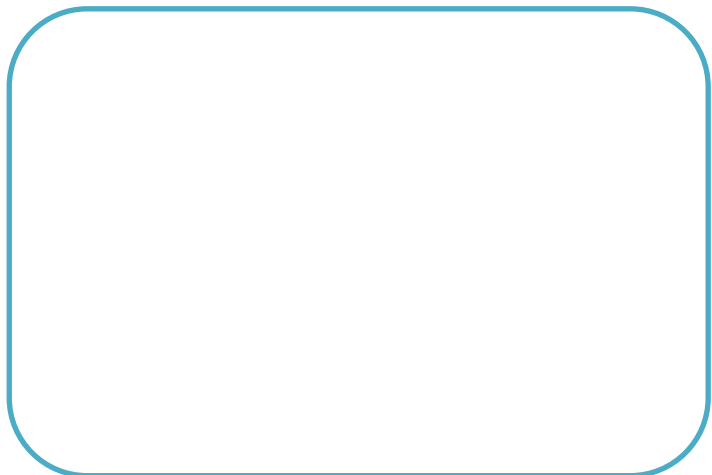
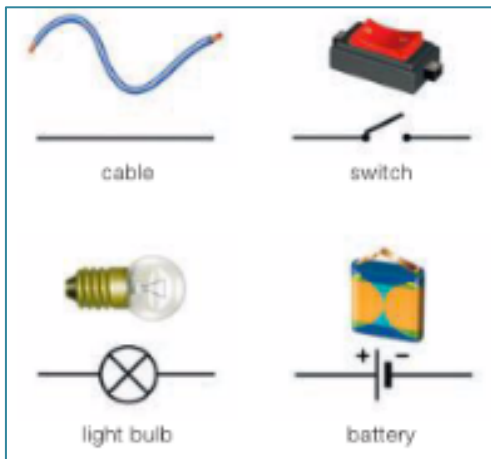
17. Look at the circuit diagrams. In which circuit diagram will the light be on? why?



I think the light will be on in the _____

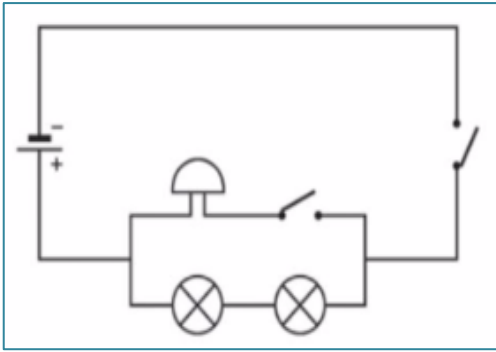
18. Look at this electric circuit. Is the fork a conductor or an insulator? How do you know? Draw a circuit diagram using the symbols.





19. What is the function of a switch in an electric circuit? When you are at home and someone says "turn off the light", what are they asking you to do? _____

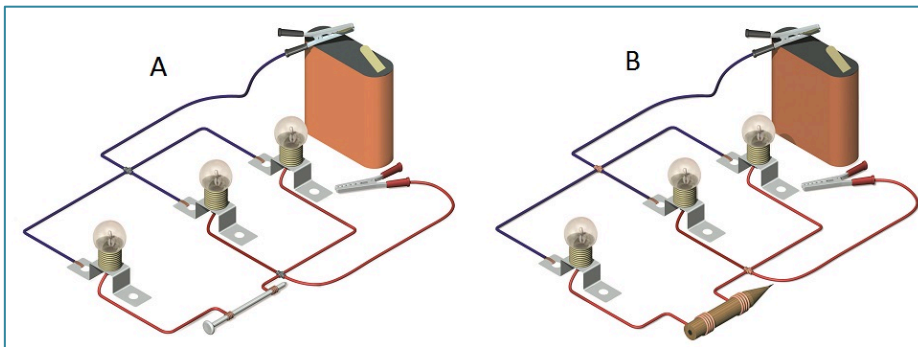
20. Look at the electric circuit and answer the questions.



How can we make the bell work? And the light bulbs? _____

What will happen if one of light bulbs goes out? _____

21. Analyse an electric circuit. A metal nail is a conductor, but a wooden pencil is an insulator. Look at the pictures and decide what will happen when each circuit is closed. Tick (✓) the correct answer in each case.



In circuit A ...

- A. only the last light bulb will turn on.
- B. all three light bulbs will turn on.
- C. only the first two light bulbs will turn on.

In circuit B ...

- A. only the last light bulb will turn on.
- B. all three light bulbs will turn on.
- C. only the first two light bulbs will turn on.

PRODUCTION OF ELECTRICITY

22. Answer these questions about the production of electricity.

a. What do we call a place that produces electricity?

b. Which types of power plant move a turbine by producing steam?

c. Which types of power plant move a turbine without producing steam?

d. Which forms of energy from the Sun are used to produce electricity?

e. Which type of power plant does not use turbines or generators?

23. How do power plants work? Match each explanation to the correct type of power plant.

A. Fossil or nuclear fuels heat up water and produce steam. The steam moves a turbine which is connected to a generator.

B. Heat from the Sun is used to boil water and produce steam. The steam then moves a turbine.

C. Water moves a turbine which is connected to a generator.

D. Wind moves a turbine which is connected to a generator.

1



2



3

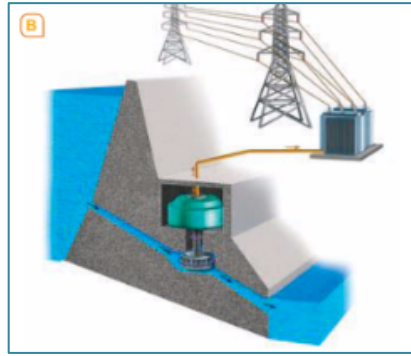


4



A.- _____ B.- _____ C.- _____ D.- _____

24. Look at the pictures. Write the type of power plant and answer the question.



- Which power plant is best for the environment? Explain your answer.

SUMMARY

25. Write T (true) of F (false). Then, correct the false statements.

- ___ a. Objects are usually electrically charged.
- ___ b. Objects with the same charge repel.
- ___ c. Lightning is a natural electrical phenomenon.
- ___ d. The electric current is stronger when there are more electric charges circulating.
- ___ e. Air and water are good insulators.
- ___ f. When a switch is on, it opens the circuit.
- ___ g. The national grid supplies electricity to every socket.
- ___ h. The function of a switch is to generate an electric current.
- ___ i. Materials which are resistant to the movement of electrons are called insulators.

26. Check your progress. Answer the questions by choosing the right option.

___ **1. What happens if you rub a pen against a wool jumper?**

- a. The pen becomes positively charged.
- b. The pen becomes negatively charged.
- c. The jumper becomes negatively charged.

___ **2. What does it mean if an object is *negatively charged*?**

- a. It has more negative charges than positive charges.
- b. It is neutral.
- c. It has more positive charges than negative charges.

___ **3. When do two electrically charged objects repel?**

- a. When they have opposite charges.
- b. When they have the same charge.
- c. When they are both neutral.

___ **4. What is a conductor?**

- a. A material that allows electrical charges to move freely.
- b. A material that does not allow electrical charges to move.
- c. A material that is always neutral.

___ **5. What is magnetism?**

- a. When electric current flows through a metal object and it behaves like a magnet.
- b. When electric current flows through a conductor and produces heat.
- c. When electric current is transformed into sound.

___ **6. What are basic components of an electric circuit?**

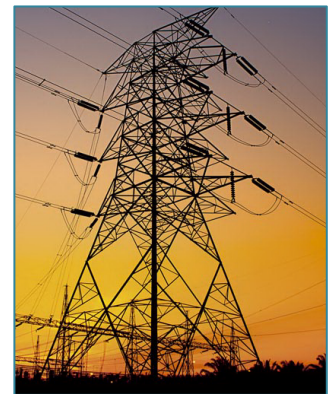
- a. A battery, a lightbulb and cables.
- b. A generator, cables, a switch and devices.
- c. A terminal and a switch.

___ **7. What is the function of the switch in an electric circuit?**

- a. It controls the flow of electricity by closing or opening the circuit.
- b. It provides electricity in a circuit.
- c. It transforms the electricity in a hydroelectric power plant.

___ **8. What generates electricity in a hydroelectric power plant?**

- a. Wind.
- b. Water.
- c. The Sun.



27. Complete the summary using the correct words.

SUMMARY

Most objects are electrically _____ . However, when non-metal objects are rubbed against each other, they _____ or lose negative charges and become electrically _____ . Objects with the same charge _____, and objects with _____ charges attract.

_____ allow electric current to flow easily through them.

_____ do not allow electric current to flow through them.

The effects of electric current can be: heat, light, sound, magnetism, movement or _____ .

The basic components of an electric circuit are the generator, the _____, devices and the switch.

_____ produce electricity from different energy sources.

cables - Conductors - gain - opposite - Power plants - neutral
repel - Insulators - chemical changes - charged

28. What's the difference between

- a. conductors and insulators _____

- b. protons and electrons _____

- c. static electricity and current electricity _____

DID YOU KNOW?

BENJAMIN FRANKLIN

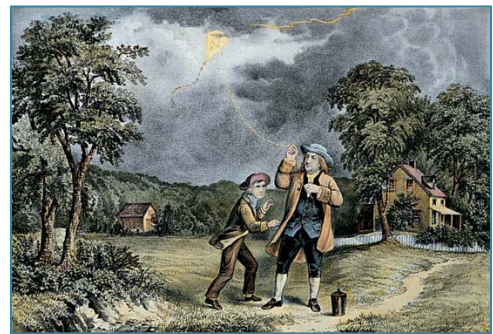
29. Read the text about Benjamin Franklin and his experiments with electricity. Then decide if the sentences below are true or false.



Benjamin Franklin was one of the most important figures in the American struggle for independence in the 18th century. He was famous for his writings on politics and science. He was also an inventor and a social activist. He founded the first public library in the United States, signed the Declaration of Independence, held numerous civic posts including United States Ambassador to France and Sweden, and conducted scientific research into

electricity.

In Franklin's most famous experiment, he proposed that lightning was in fact electricity. To prove his theory, he flew a kite into an electric storm cloud. Franklin made sure he was well insulated, as, if he was correct, the electricity from the storm would have killed him. The end of the string was connected to a

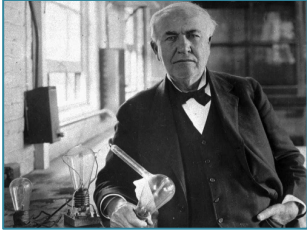


Leyden jar which was a device used to store electricity. During the storm, the kite became charged with electricity which was passed down to the Leyden jar which in turn became charged. Franklin proved right. He then used this theory to invent the lightning rod which protects buildings from lightning strikes.

- a. Franklin was an important statesman.
- b. He experimented with electricity.
- c. In his most famous experiment, he proposed that thunder was electrical
- d. Franklin made sure he was wearing rubber boots.
- e. The kite was connected to a special instrument called generator.
- f. Franklin invented the lightning rod.

THOMAS EDISON

30. Read the text about the famous inventor, Thomas Edison, then decide if the sentences below are true or false.

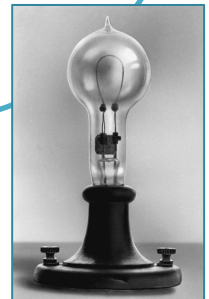


Thomas Edison was born in Ohio, USA, in 1847. He was the youngest of seven children, and due to his carelessness at school, he was educated at home by his mother. From the age of 12 he started selling his own newspapers, and by the age of 15 he was working as a telegraph operator. However, during this period, he continued to study on his own and to experiment in the field of electrical science.

At the age of 22 he moved to New York, and after developing his first invention, a stock ticker for the exchange, he was able to set up a small laboratory. This gave him the time and the money to develop his later inventions; an improved telegraph machine, the phonograph for recording sounds, the carbon microphone used in telephones, and most famously, the light bulb. His laboratory moved to New Jersey where he worked on motion picture cameras, car batteries and many other inventions and gadgets. He patented over 1000 inventions and in 1931 he died a rich man.

- ___ a. He was a conscientious student.
- ___ b. At the age of 15, he got his first job.
- ___ c. He learnt through experimenting.
- ___ d. He set up his laboratory with money from his mother.
- ___ e. His most famous invention was the light bulb.
- ___ f. He died in poverty.

In reality, Edison did not invent the light bulb. His challenge was to find a cheap material that could be heated up enough to produce light without melting. Finally, he tried a filament made of bamboo carbon fibre. It worked for forty hours!

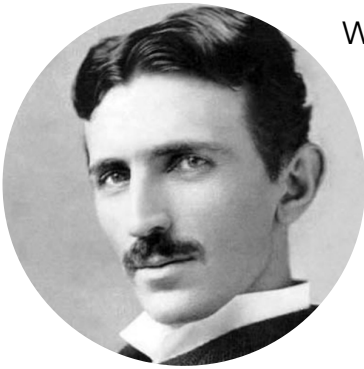


Some more interesting information...

- https://kids.kiddle.co/Thomas_Edison
- <https://mocomi.com/thomas-edison/>
- <https://www.youtube.com/watch?v=b1IKwZTzIY&t=7s>
- <https://www.youtube.com/watch?v=XWWgDn0C6DA&t=107s>

SHOW YOUR SKILLS

31. Use the internet to find about the life and work of Nikola Tesla.



When was Nikola Tesla born?

Who did he work for?

Why did he start working on his own?

What projects did he work on?

Did he succeed financially?

NICOLA TESLA

Check these webs

- <https://kids.britannica.com/kids/article/Nikola-Tesla/608482>
- <https://mocomi.com/nikola-tesla-biography/>
- https://kids.kiddle.co/Nikola_Tesla
- <https://www.coolkidfacts.com/nikola-tesla/>
- <https://kidskonnnect.com/people/nikola-tesla/>
- <https://www.biography.com/inventor/nikola-tesla>

Watch this video

- <https://youtu.be/g1DqaqBiVRY>