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|  | **EXERCÍCIO DE INGLES**  **Nome:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **PROFESSORA: Helga Nelken Data de entrega: 21/9** |

9º Ano / 3ª etapa

Read the text below and follow the instructions:

**How a Chinese chemistry experiment became a U.S. Fourth of July tradition**

Fireworks were invented long before the United States used them to celebrate its independence. Sometime between A.D. 600 and 900, two Chinese scientists mistakenly mixed the chemical compound of potassium nitrate with sulfur and charcoal, creating a crude gunpowder. Legend has it that they were trying to create a drink that would help them live forever. What resulted was the first documented example of a firecracker.

"Fireworks were first just exploding bamboo tubes," said John Conkling. He's the former head of the American Pyrotechnics Association, a group that supports the fireworks industry. The Chinese got more and more creative over time, Conkling said. "[They] realized if you put other minerals in the basic material you could get different colors.”

1. Answer the questions about the text above :
2. How were fireworks invented ?

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1. What happens if you put other minerals in the basic material of fireworks ?

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1. Fill in the blanks :

**The Main Ingredients For Fireworks**

The basic firework requires three ingredients. It needs an oxidizer, a fuel and a chemical mixture to produce the color. An oxidizer is a type of c\_\_\_\_\_\_\_\_\_\_\_\_\_, usually oxygen, that causes fuel to burn. Without oxygen or an oxidizer, fuel will stop b\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is why putting something over a candle will cause the flame to go out. Over the years, s\_\_\_\_\_\_\_\_\_\_\_\_\_ have staged various chemical reactions to produce fireworks of different c\_\_\_\_\_\_\_\_\_\_\_\_.

When different elements burn, they produce light at different wavelengths. Each wavelength corresponds to a certain color. For example, lithium and strontium carbonates produce deep r\_\_\_\_\_\_\_\_ and p\_\_\_\_\_\_\_\_ when they are burned. Copper chlorides produce blue. Titanium, aluminum and magnesium are silvery. Calcium chloride is orange, sodium is yellow and barium burns green. Because of copper’s narrow temperature range, blue is the most difficult color for pyrotechnic experts to create.

1. Read the text below and write synonyms for the underlined words:

**A Release Of Energy Is Needed**

Electrons are energy particles found in all forms of matter. When they are exposed to heat, they gain energy and change from their original state. "At high temperatures, an electron can get excited and jump to a higher energy level," said Conkling. “When it cools off, that electron drops back down to its normal energy state." In doing so, the electron loses the energy it had gained. This energy is released as light, with a certain wavelength. The color of that light depends on what chemical elements are present.

<https://newsela.com/read/chemistry-july-fourth/id/32340/>

1. Found \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Gain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Change \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Released \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**GRAMMAR**

Circle the correct answers.

1. You **must / must not / have to / don’t have to** talk loudly in the library. It’s a quiet place.
2. We **should / must / have to / don’t have to** go to school tomorrow. It’s closed for a holiday.
3. You **must / must not / should / shouldn’t** pass a test before you can drive a car alone. It’s the law!
4. You **should / shouldn’t / have to / don’t have to** watch TV late at night. You’re always tired in the morning.

5. You **should / shouldn’t / must not / don’t have to** buy your mom a nice birthday present. She would really like it.

Circle the correct answers.

1. You must / must not make any noise because the baby is sleeping!
2. You should / shouldn’t buy a laptop. Tablets are better.
3. You must / must not study hard to do well in school.
4. I have to / don’t have to clean the kitchen, but I’m going to do it anyway.

5. You should / shouldn’t go to bed earlier. You’re always so tired.