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QUESTION 12

Select the best answer from the drop-down menu.

Each element ✓ has its own atomic emission spectrum.

QUESTION 13

Select the correct answers.

Indicate the forms of energy that are given to metal atoms and ions to emit color.

- [x] electrical ✓
- [x] heat ✓
- [ ] potential
- [ ] chemical
- [ ] water
- [ ] sound

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QUESTION 14

Fill in the blank with the correct term from the Word Bank.

Word Bank		
gained	lost	stable



The flame color displayed by potassium is shown in the image alongside.

The violet color is the combination of all the individual colors emitted by the

excited ✓ electrons in the potassium atom.

QUESTION 15

Select the correct answer.

Metal atoms and ions will emit color when given energy in which form?

- ○ heat
- ◉ heat, electricity, and electromagnetic radiation ✓
- ○ electricity
- ○ electromagnetic radiation

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QUESTION 16

Drag and drop the correct answers.

The continuous spectrum has all wavelengths over a wide range with no gaps.

In the emission spectrum, each line corresponds to an emitted photon in the form of visible light.

Each emitted photon has a specific energy.

radiant

intensity

QUESTION 17

Select the correct answer.

When an atom is given energy, it absorbs the energy. What happens as a result?

- The electrons release visible light.
- The atom enters an excited state. ✓
- The atom enters a stable state.

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- ○ The atom begins to emit energy.

QUESTION 18

Select your answer from the drop-down menu.

The color of a heated metal corresponds to the frequency ✓ of the photons that it emits.



QUESTION 19

Select the best answer.

Choose the statements that describe why metals emit light of a specific color when exposed to heat.



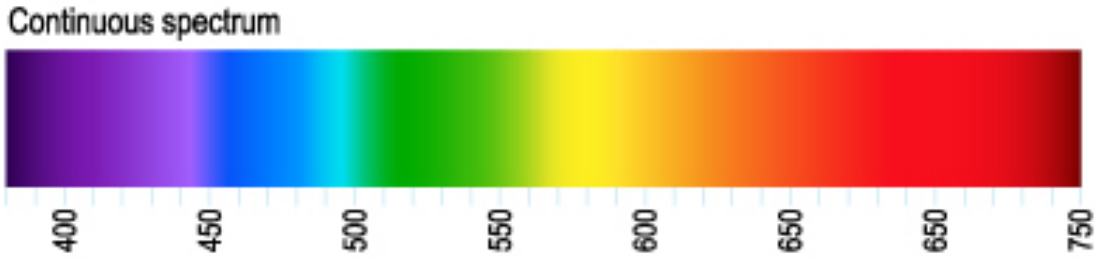
- ☐ They emit electromagnetic radiation when they give off light.
- ☐ Their emission spectra only include certain wavelengths.
- ☐ They emit the same amount of energy that was absorbed.

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- [x] Their photons each correspond to a specific frequency. ✓
- [ ] Their emission spectra include all wavelengths with no gaps.
- [x] Their electrons are only emitting certain photons. ✓

QUESTION 20

Select the correct answer from the drop-down menu.



A photon has 4.17×10^{-19} joules of energy.

The color of this photon is blue ✓ .

QUESTION 21

Fill in the blank with the correct term from the Word Bank.

Word Bank	

don't match	fit partially	fit perfectly	oppose

When comparing the emission spectrum to the absorption spectrum, the emission spectrum lines would **fit perfectly** ✓ with the absorption spectrum.

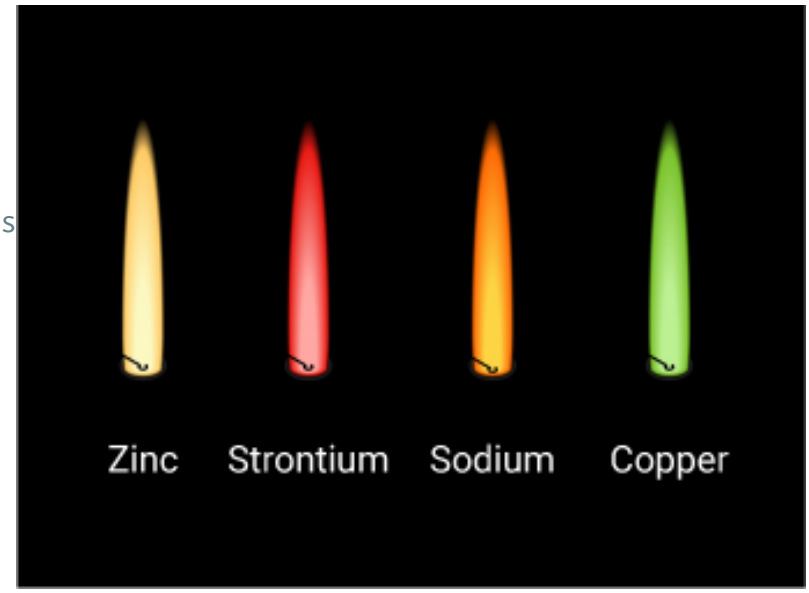
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QUESTION 22

Select the correct answer.

Study the different flame colors in the image alongside.

Which of these elements' photons has the **most** energy?



- (●) copper ✓
- ( ) sodium
- ( ) zinc
- ( ) strontium

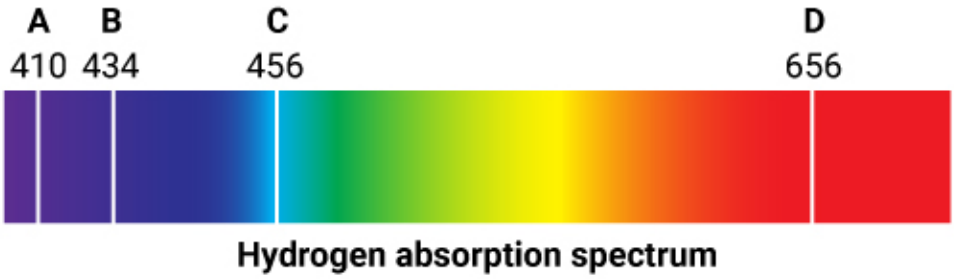
QUESTION 23

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QUESTION 23

Select the correct answer.

Study the absorption spectrum of hydrogen alongside. Which of the lines in this absorption spectrum has 4.35×10^{-19} joules of energy?



Hydrogen absorption spectrum

- ○ line B
- ◉ line C ✓
- ○ line A
- ○ line D

QUESTION 24

Fill in the blank with the best term from the Word Bank.

Word Bank			
absorption	light	release	discontinuous

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The continuous spectrum minus the emission spectrum gives the

absorption ✓ spectrum.

QUESTION 25

Drag and drop the correct term.

Classical physicists expected that light of high intensity would eject more

electrons ✓ from a metal's surface.

protons ions atoms

QUESTION 26

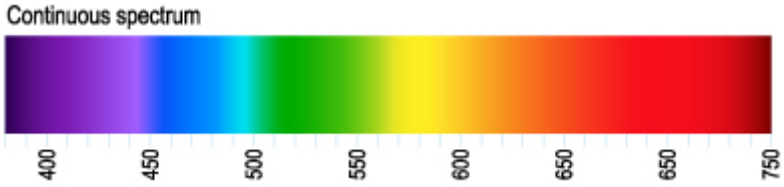
Select the best answer.

A photon of light has

3.31×10^{-19}

J of energy.

What color is this photon of light?



- (●) orange-yellow ✓
- ( ) blue-green

yellow-blue

orange-red

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